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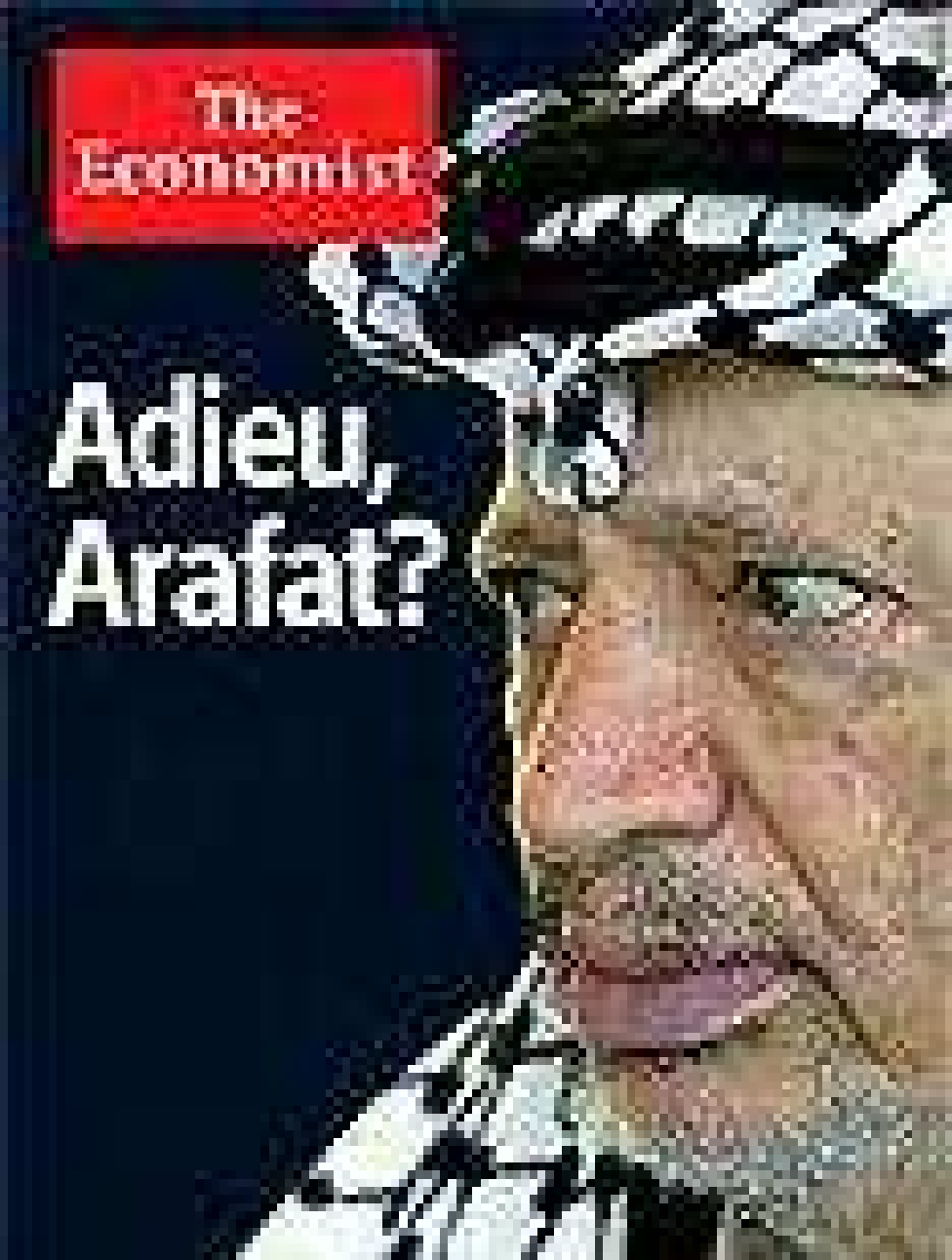
Adieu, Arafat?



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Politics this week

Dec 6th 2001
From The Economist print edition

A government for Afghanistan

Rival Afghan ethnic groups, meeting in Bonn, agreed on a new government for **Afghanistan**. Hamid Karzai, a Pushtun chief, was to lead an interim administration in which members of the mainly Tajik and Uzbek Northern Alliance would hold the three principal posts of foreign minister, defence minister and interior minister. This government would take power on December 22nd and rule for six months, after which elections would be held. The chief Uzbek warlord, Abdul Rashid Dostum, said he would not work with it.

See article: The outline of an Afghan government

American aircraft kept up their **bombardment** of the Tora Bora region of Afghanistan in a bid to flush out Osama bin Laden and his men. At Kandahar, the Taliban's last stronghold, American marines moved to cut off supply and escape routes from the city but three American soldiers were killed by a bomb dropped from one of their own planes.

See article: Where next after Afghanistan?

Israel's war on terror

EPA

After **Hamas suicide-bombers** killed 25 people in Jerusalem and Haifa, Israel's government declared Yasser Arafat's Palestinian Authority a terror-supporting organisation. The Israeli army attacked the authority's installations, threatening Mr Arafat himself. The United States, which in the past has called for Israeli restraint, did not do so. Instead, it froze the assets of three groups said to be helping to finance Hamas. Mr Arafat's men arrested several Hamas activists but were prevented by supporters from putting the group's spiritual leader under house arrest.

See article: Israel's response to the latest terror attacks

America's House of Representatives passed a sanctions bill that would limit the travel abroad of members of the **Zimbabwe** government but, at the same time, promised aid and investment if the rule of law were restored and a free election held. The Senate passed the bill earlier this year. George Bush has yet to sign it. In Zimbabwe a bill threatened journalists with tough new restrictions.

See article: Changing the rules

EPA

Alassane Ouattara, a former prime minister, returned from exile to a triumphant welcome in **Côte d'Ivoire**. He belatedly addressed a forum of national reconciliation, calling for fresh elections.

Staying alert

Tom Ridge, America's director of homeland security, issued a new **terror alert**, though he gave no details about the origin of the threat or possible targets. The Department of Health said that tens of thousands of letters might have been contaminated with tiny amounts of anthrax spores from infected letters.

See article: How tough are John Ashcroft's measures?

After a bitter campaign, Lee Brown, the first black mayor of **Houston**, won his bid to run for a third term by beating Orlando Sanchez, who had hoped to become the city's first Latino mayor.

See article: Urban politics changes colour

An investigation of the **Mafia** involving an undercover cop finally ended in the arrest of some 73 members of the Genovese “family”, New York city's biggest organised-crime operation.

A Republican-backed bill to impose a six-month moratorium on **human cloning** failed in the Senate. It is now unlikely that the Senate will pass a cloning law this year.

Low standards

Britain's commissioner for parliamentary standards, Elizabeth Filkin, publicly accused members of the House of Commons, some “holding high office”, of “remarkable pressure” and “whispering campaigns” to undermine her. She has repeatedly exposed dubious behaviour by MPs, ministers included, and had been told she would not be automatically reappointed.

See article: To a nunnery go

The leaders of the two communities in **Cyprus**, Glafkos Clerides and Rauf Denktash, held their first direct talks in four years, and agreed to restart negotiations on the island's future in January. This may pave the way for EU membership backed by both Greece and Turkey.

Facing a parliamentary vote against him, **Carlo Taormina**, a junior minister at Italy's interior ministry, resigned. He had attacked some Milan judges eager to pursue a politically charged corruption case. After the minister of justice then made fresh attacks the entire board of the magistrates' union resigned. Italy also held up agreement on an EU arrest warrant, urging that fraud and corruption be removed from the list of crimes to which it could be applied.

See article: Italy's new government is stalling

Bank of France workers concerned with distributing the euro went on strike. Unions have called a national bank strike for January 2nd, the first working day after the euro goes public. Meanwhile, gendarmes demonstrated over pay and conditions, and air-traffic controllers struck, supposedly against air-space liberalisation plans.

Reuters

See article: Irrational pessimism

After months of talks, **Turkey** lifted its objections to the formation of a 60,000-strong European Union rapid-reaction force. Turkey, a member of NATO, had wanted to deny the EU access to the alliance's assets unless it were given a veto over their use.

Taiwan votes

Taiwan's pro-independence Democratic Progressive Party dislodged the Nationalists as the biggest group in parliament, winning 87 of the 225 seats. The Nationalists took 68 seats, down from 114. China said it was “paying very close attention” to any move by Taiwan to declare independence.

See article: A bad election for the Kuomintang in Taiwan

In a rare public protest in **Vietnam**, about 20 people complained in Hanoi that local authorities had stolen their land. They sought “democratic treatment”.

Early results showed that the party of **Sri Lanka's** president, Chandrika Kumaratunga, was heading for defeat in a parliamentary election.

See article: Sri Lanka's election

A detention centre in Pekan Nenas, in **Malaysia**, was set on fire by inmates, many of them Indonesians due to be deported. Malaysia has about 500,000 illegal immigrants from Indonesia, and aims to deport 10,000 each month.

Money troubles

Argentina's financial troubles took a turn for the worse: after a run on the banks, the government decreed exchange controls and restrictions on the withdrawal of bank deposits. The IMF suspended its loan programme; unofficial reports said it wants Argentina to devalue or dollarise.

See article: Argentina's economic crisis

Officials from **Canada** and the United States signed agreements to increase security along their (previously undefended) border and to take steps towards harmonising their immigration policies.

See article: Anti-terrrorism in Canada

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Business this week

Dec 6th 2001
From The Economist print edition

Decline and fall

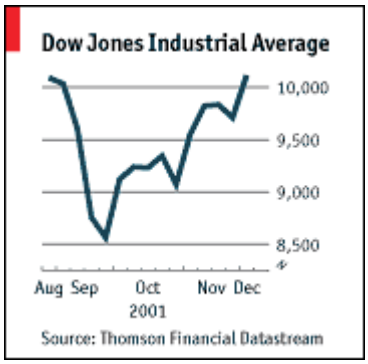
Enron filed for bankruptcy protection. The energy-trader laid off over 5,000 staff, some 25% of its workforce, and tried to sell assets to raise cash and reduce debts that could total over $30 billion. Enron also launched a $10 billion lawsuit against Dynegy, which had pulled out of a takeover bid. Dynegy countersued to get its hands on a valuable gas pipeline. These are just two amid a welter of lawsuits and official investigations into the unorthodox financial deals that brought Enron down.

See article: The amazing disintegrating firm

America's biggest steel makers are talking of consolidation as a way to compete with large global rivals. **US Steel** and **Bethlehem** discussed a merger that could lead to job cuts and plant closures in an industry dogged by overcapacity. But the steel makers want government help: more import restrictions plus cash to pay for retired employees.

See article: US steel producers talk mergers

America's stockmarkets surged upwards, on hopes that the recession may prove short-lived. The Dow Jones Industrial Average rose above 10,000 and the Nasdaq Composite went over 2,000, both reaching their highest levels since early September.



See article: Private equity

Ford gave warning that losses in the fourth quarter would be four times higher than the gloomy estimates of analysts. Job losses and plant closures seem certain to follow in a restructuring plan that the Detroit car maker plans to announce in January.

Gerry Levin, chief executive of **AOL Time Warner** and architect of the merger that created the company, announced that he would step down next May. Richard Parsons, the company's co-chief operating officer, will take the helm of the world's biggest media empire.

See article: Face value: AOL Time Warner's new boss

A former chairman of **Sotheby's**, Alfred Taubman, was found guilty of conspiring with the auction house's main rival, Christie's, to fix prices in the early 1990s. Mr Taubman may face a jail sentence plus a heavy fine.

Too many chips

Overproduction continues to dog the high-tech memory-chip market. **Hynix Semiconductor** of South Korea began alliance talks with America's **Micron Technology** that could lead to debt-laden Hynix cutting production on older lines but gaining access to American markets. Micron would in turn gain a presence in China through the Korean firm. A full merger, to create the world's biggest memory-chip maker, has not been ruled out.

Joachim Milberg, **BMW's** professorial chairman, made a surprise decision to quit a year ahead of time.

The quiet engineer dismantled a disastrous takeover of Britain's Rover Group and kept profits buoyant despite a waning global economy. Helmut Panke, the company's chief financial officer, will succeed him.

Burger King's chief executive, John Dasburg, was reportedly poised to lead a leveraged buy-out of the fast-food chain, which could be worth some $3 billion. Diageo, the burger company's British owner, wants out of the business to concentrate on its alcoholic drinks.

The European Commission fined Switzerland's **Roche** and four other chemical firms *euro*135m ($120m) for fixing the price of food additives. Belgium's **Interbrew,** France's **Danone** and other small breweries were also fined a total of *euro*90m for fixing beer prices. These fines follow recent penalties of *euro*855m imposed on 13 firms accused of fixing vitamin prices.

The dire state of world advertising was confirmed by **Cordiant Communications**. The British advertising company issued its third profit warning in four months and said that business was likely to get worse still. It announced further job cuts to take the total for the year to 1,100, some 10% of the workforce.

Russia paid lip service to OPEC's pleas to cut its oil exports. It said it will reduce exports by 5%, or 150,000 barrels a day, but sceptics note that Russian output typically falls at this time of year anyway. Other non-OPEC countries have talked of similar cuts.

See article: Russia and OPEC

Merrill Lynch and **Unilever's** pension fund settled out of court in a £130m ($182m) lawsuit. Unilever had sued Merrill for negligent management of its pension money. Merrill is rumoured to have offered more than £70m to end the case. The win could inspire similar lawsuits against underperforming fund managers.

The future of transport

Dean Kamen, an American technology guru, at last unveiled an invention that had been so secret that it merited two codenames, “Ginger” and “IT”. **Segway** proved to be an individual electric transporter resembling a rotary lawnmower but capable of 20kph and with a 27km range. “An improvement on walking,” claims the inventor.

See article: Inventor reveals motorised scooter

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Middle East

Adieu, Arafat?

Dec 6th 2001
From The Economist print edition

Israel might be even less safe from terrorist outrages without him

Get article background

Reuters

FROM September 11th until last weekend, George Bush's administration sturdily resisted Israel's pressure to squeeze its conflict with the Palestinians into the umbrella-shade of America's war on international terrorism. Instead, the Israeli government was urged, as so often before, to temper its response to Palestinian violence, to show restraint in the interests of an elusive peace and an anti-terrorist coalition. But the vile suicide-attacks in Jerusalem and Haifa, which killed at least 25 people and wounded many more, went too far. Ariel Sharon, Israel's prime minister, who happened to be on Mr Bush's Washington doorstep at the time, seems to have been given the nod to defend his country as he sees fit. And how he sees fit is to respond to terrorism with an anti-terrorist war that the Israelis like to compare to America's own.

Israel's war, perhaps still in its early stages, is pointedly aimed at Yasser Arafat, his Palestinian Authority and its institutions. The Israeli cabinet has determined that the Palestinian Authority is “an entity that supports terrorism” and that Tanzim (Fatah's field organisation) and Mr Arafat's own presidential guard are “terrorist organisations”. If Mr Arafat is to save himself and his regime, he must fulfil his commitment to prevent violence against Israel by arresting and prosecuting those who plot it or carry it out. The onus is squarely and solely on the Palestinian leader, say the Israelis, and the Americans, at least for the moment, are saying the same.

They are right in pointing out that the protection of Israel's security is an obligation that Mr Arafat has accepted. What they do not add is that Mr Sharon's policy of assassinating Palestinian militants, invading Palestinian towns and blowing up police stations has made the obligation unfulfillable. If Mr Arafat now gave orders for the wholesale arrest of the people whom Israel names as culpable, he would not be obeyed. Given Hamas's growing popularity with an embittered Palestinian population, he has difficulty in getting his Fatah security men to arrest Hamas leaders, let alone to arrest their fellows in Fatah. His people, under bombardment, are balking at the occupied being asked to provide security for the occupier.

The show can't go on

Mr Arafat has always run a one-man show, surrounded by cronies, with barely a hint of democracy. Now the show is in deep trouble. Though he takes the decisions, he likes to have a consensus behind him. But by trying to give a little bit of ground to everyone—the Americans, the Israelis, his own people—the Palestinian leader has ended up losing the trust of all three. In the 40 years or so since he founded, inspired and led the Palestinian liberation movement, Mr Arafat has survived many travails. He has been written off, wrongly, before. But he may now have been fatally weakened, partly by Israeli actions and partly by his own vacillations as the region twists in a cruel cycle of eye-for-an-eye vengeance.

His weakening, or so many people believe, may be part of Mr Sharon's longer-term intentions. Israel's prime minister does not have to carry his war on terrorism to the extreme, of “eliminating” Mr Arafat and his fellows. That would still be unacceptable to the Americans, and to the prime minister's Labour colleagues—if they remain in his coalition (see article). Loss of control, and increasing irrelevance, may suffice. Mr Sharon's long practice has been to make ad hoc agreements with local leaders, while

preserving Israel's overall control. He may hope to do the same again, while bringing in ever more settlers to make the transfer of land ever more remote.

The absence of a convincing Palestinian central government could absolve Mr Sharon from the land-for-peace obligations that, from deep conviction, he finds so hard to accept. He could not, when he became prime minister, go back on the Oslo peace accords. Although he opposed them, Israel was committed, and most Israelis saw the treaties as paths to the lasting peace that they craved. Now, however, the peace process has dematerialised: in the face of the *intifada* and Israel's response to it, only a head-in-the-clouds optimist can believe that a genuine land-for-peace agreement has any chance of being put back on the table any time soon. With a mortally wounded Palestinian Authority, the prospect is even bleaker.

The radicals in the wings

If no glimmer of light is to be found in all this gritty darkness, is Mr Arafat's survival essential? In other circumstances, it would be easy to agree that he was well past retirement age. Brilliant as a resistance leader, he has turned out to be rotten at government, leading his people into wretchedness. He has failed to prevent a year of Palestinian violence against Israel, turning a blind eye to terrorism. He is a poor negotiator, tumbling into traps. Above all, he has lost control. His successors, secular or Islamist, would almost certainly present a more cohesive programme and would probably be more democratic. But, reflecting the current Palestinian consensus, they would also be more radical in their policies towards Israel.

The Palestinians' point of view is rather simple: they believe that they are an occupied people fighting a colonial war against their military occupier. They do not accept that they were offered a fair deal last year. Unlike Mr Arafat, they have probably given up on any good coming out of the American connection. And most of them consider their terrorist strikes on Israel, let alone their attacks on Israeli soldiers and settlers, to be a just response to the Israeli strikes that, in the past 14 months, have killed nearly 800 of their people, many of them as innocent as the Israeli victims in Jerusalem and Haifa.

Outsiders do not have to accept the Palestinians' vision of themselves to recognise, and try to check, the danger of the course that the Israeli government is now pursuing. A Palestinian leader who has lost control may sound expendable. But his departure is unlikely to open the way for a regime that is both in control and prepared to co-operate with any workable formula for peace. Mr Arafat has plainly failed to please everyone. But if he is harried by the Israelis into oblivion, his successors, at great cost to the region, may have an agenda that has no interest in, and no chance of, pleasing anyone.

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Taiwan's election

Kuomintangled

Dec 6th 2001
From The Economist print edition

The electoral humbling of the Kuomintang is good news and bad news for Taiwan

Get article background

AP

THE demise of a great political party is a moving thing. And the Kuomintang (KMT) is one of the world's most venerable, founded by Sun Yat-sen himself in 1912, and having exercised power continuously since 1928, first on the Chinese mainland and, since 1949, on Taiwan. In Taiwan's election last weekend, it lost its control of parliament, having lost the presidency to Chen Shui-bian last year. With large parts of its membership deserting it for breakaway parties—including one established by Lee Teng-hui, a former KMT president—the party now looks in danger of disintegrating entirely (see article).

But few tears will be shed, nor should they be. For all the great services the KMT has performed for Taiwan's economic development in the past, it has suffered from one fundamental flaw that it has been unable to correct. Its dogmatic insistence, against all reason, that there is only one China—even though it and the mainlanders may differ over who they think rules it—works against it fatally. For a party that once ruled that one China, it is perhaps to be expected that it will never accept that the country has been partitioned. But a clear majority of the Taiwanese no longer subscribe to this view, even if they are wary of antagonising their neighbour by going the whole hog and declaring outright independence.

For them, the one-China principle means singing to the Communists' tune. President Chen's popularity is as high as it is because he refuses to accept it as a precondition for talks about possible reunification, as China insists he must. At the same time, he has wisely allowed Taiwanese companies freedom to invest on the mainland, and is allowing direct travel links across the Strait. These are sensible steps that benefit both China and Taiwan, while not compromising the island's sovereignty. Reunification, if it is ever to be acceptable to Taiwan, must be the unification of two sovereign states.

The Communists won't like it

The fate of the KMT will be carefully studied by the leaders of its sister party in Beijing for another reason as well: the two parties are far more similar than either now cares to admit. The KMT and the younger Chinese Communist Party worked closely together in the 1920s, until Chiang Kai-shek (pictured) turned against his Communist protégés in 1927, beginning an internecine struggle that was to end in his own flight to Taiwan in 1949. But, until two or three years ago, it was impossible to avoid being struck by the enduring similarities between two parties both organised on the Leninist lines learned in those early days. The grand party offices, the precise way in which party organisations paralleled those of the state, and the party's deep and lucrative involvement in all aspects of economic life have all left behind their doubles in China.

With one large difference. Shortly before his death in 1988, Chiang's son, Chiang Ching-kuo, ordered a breathtaking series of reforms that ended most of the restrictions on opposition parties and allowed a genuine contest for power to begin. That contest has now resulted in the eclipsing of the party that started it—just as the ending of its political monopoly spelt political decline for the Soviet Communists. China's Communist Party has allowed no such relaxation; it has, indeed, stamped out the smallest threat to its authority with great brutality, and—consequently, as it surely thinks—is still in power. The great

drawback of the KMT's demise is that the Communists will see in it yet another reason never to change.

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Argentina's financial crisis

The end

Dec 6th 2001
From The Economist print edition

Domingo Cavallo's refusal to face realities is digging Argentina into an ever-deeper hole

EPA

Get article background

A DEMOCRATIC government denies its citizens free and unrestricted access to their own money at its peril. Yet this is what Argentina's president, Fernando de la Rua, and his economy minister, Domingo Cavallo, did last weekend. As the steady trickle of money seeping out of the country's banks turned to flood, the government imposed draconian controls.

Argentines can now draw only $1,000 per month in cash from their bank accounts, and face other restrictions (see article). The controls have prevented the collapse of the financial system. But they almost certainly mark the last, desperate, act in a dogged effort by Mr de la Rua and Mr Cavallo, backed until this week by the IMF, to avoid the inevitable: default on the country's $135 billion public debt and the abandoning of the currency board under which Argentina's peso is pegged at par to the dollar. The efforts to avoid default and to sustain the currency board (known by Argentines as “convertibility”) have become not just self-defeating. They are also causing as much damage as the ills they are designed to prevent.

The currency board, under which pesos are supposed to be freely convertible and backed by hard-currency reserves, was set up a decade ago. It brought Argentina much-needed stability, and bursts of growth. But it also allowed the government to pile up dollar debts. As capital retreated from emerging markets, and as Argentina's main trading partners devalued, in 1998 the economy sank into a recession that shows no sign of ending, and has made the debt unpayable.

Mr Cavallo, drafted in by Mr de la Rua last March, has tried to restore solvency by cutting government spending. There have been some achievements. Last month, provincial governors agreed to accept cuts in revenue transfers from the centre. Local banks and pension funds have agreed to swap some $50 billion of bonds for more generous loans, saving the government $4.5 billion in interest payments next year. Mr Cavallo now hopes to persuade foreign bond-holders to follow suit.

But these victories have been pyrrhic. For practical purposes, the “voluntary” debt swaps amount to default. Mr Cavallo's ingenious fiddling (his latest wheeze was to decree cuts in peso interest rates), and Mr de la Rua's indecision, have shattered confidence. Liquidity has dried up. Recession has turned to slump. Since July, the economy has shrunk at an annual rate of around 10%. Tax revenues have plummeted, leaving the government unable to meet its target, agreed on with the IMF, of balancing its books by the end of the year. Even the currency board has become a sham. Of what use is a “convertible” currency if money cannot be withdrawn from the bank? The provinces and the national government have resorted to printing exchangeable bonds—funny money. Other parallel currencies, such as discounted cheques, are now likely.

To dollarise or devalue?

The banking controls should at least give Argentina a few weeks of calm. The government must use them to decide whether Latin America's third-largest economy should adopt the dollar fully, or float its currency. Either course involves costs—but so does continuing to pretend that the choice does not have

to be made.

A debt default is inevitable and will be legally messy. That shows the urgency of the search, now endorsed by the IMF, for an easier way for countries to declare bankruptcy, though there are many pitfalls involved (see article). But Argentina might recover from default, provided it was combined with policies that allowed a return to growth, and the shock elsewhere might be transient. Investors have belatedly started to discriminate between Argentina and its neighbours.

Some economists argue that default should be accompanied by full dollarisation. The economy is already largely dollarised; the government has now ordered that all loans be in dollars. But the dollar is not the right currency for Argentina. Only 11% of its exports go to the United States. And although its total exports have continued growing, they remain tiny in relation to its debt. Dollarisation would not solve Argentina's trading problems. So it would not of itself bring growth nor restore creditworthiness. It would oblige Argentina to continue trying to adjust its real exchange rate by deflation (cutting prices and wages in nominal terms). That process has already sent many businesses under. More would follow.

Some economists argue for devaluation followed by dollarisation. But better than this hybrid would be floating the currency. Such a decision might bring violent devaluation, inflation and a chain of bankruptcies affecting banks, businesses and households. So the government would have to take steps beforehand to share out the costs between debtors and creditors. But at least it would provide the prospect of a return to growth in the medium term.

It would be foolish to pretend that any of these decisions is easy. But they can no longer be avoided. That prompts the final question: can Mr de la Rua and Mr Cavallo change course? If they cannot, Argentina may require a new government.

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Enron's bankruptcy

Wasted energy

Dec 6th 2001
From The Economist print edition

Lessons must be learnt from America's largest corporate bankruptcy

Get article background

THE end was not unexpected, but it was still spectacular. On December 2nd Enron, once America's seventh-biggest company, filed for Chapter 11 bankruptcy. Only days earlier, its bonds had been downgraded to junk and Dynegy, a smaller energy-trading rival, had pulled out of a planned takeover. Enron is the largest company ever to go bankrupt.

Disentangling the resultant mess (and lawsuits) will keep legions of lawyers employed for years to come. The company's opaque accounting makes it hard even now to understand why it got into trouble, and whether the cause was bad luck or worse (see our special report). The close links between Enron's chairman, Kenneth Lay, and George Bush will keep the affair in the political limelight. And Enron's staff, whose retirement fund was, at the company's urging, mostly invested in Enron shares that they, unlike the company's bosses, were then unable to sell, deserve public sympathy. But if America's capital markets are to stay the cynosure of the world, some quick lessons need to be drawn.

The most important concern auditing. Enron has restated its profits for the past five years, chopping $600m off its earlier numbers. The company's auditor was Andersen, now a target of many lawsuits. Last year Enron paid Andersen a fat audit fee of $25m; it also paid the firm $27m for consulting services. In June Andersen paid $7m to settle a case brought by the Securities and Exchange Commission (SEC) over its audit of Waste Management, another company that had to restate its profits; in that case, the audit fee was $48m, and consulting income was $31m. Accounting firms insist that there is no conflict of interest in consulting for audit clients. But every fresh scandal increases public scepticism. After Enron, the SEC should do what its former chairman, Arthur Levitt, has long urged: ban accounting firms from doing consulting work for their audit clients.

Accounting rules also need updating. One reason why investors did not understand Enron's books is that the company shifted many debts into off-balance-sheet vehicles. In most countries, such debts are consolidated into the main accounts. That ought to happen in America as well. Similarly, the SEC should tighten its disclosure requirements for all publicly quoted companies. And it should discourage the practice of investing staff retirement funds in company shares.

Next come lessons for Wall Street, particularly investment banks and credit-rating agencies. Just as in the dotcom bubble, Wall Street's highly paid equity analysts have done lamentably. Right up to last week, such reputable firms as UBS Warburg, Goldman Sachs and Lehman had buy or hold recommendations on Enron. Once again, the suspicion is of a conflict of interest: equity recommendations are motivated by a desire to win corporate-finance work or to protect big borrowers. Luckily, the past two years have taught investors to treat equity research sceptically—a lesson Enron will reinforce.

The rating agencies are harder to deal with. Financial markets increasingly depend on them. The new Basel accords on bank capital may even give rating agencies a bigger role in determining how much capital banks set against loans. Yet there is good reason to suspect that the rating agencies succumbed to pressure, from Enron and its banks, not to downgrade the company's debt, because that was sure to

tip it into bankruptcy. The agencies need to re-establish their independence if their credibility is not to go the same way as the analysts'.

Last are regulatory lessons. There is a risk of turning any bankruptcy into an excuse for massive new regulation. Some have argued that energy is too important to be left to markets of the sort that Enron pioneered; or that, since it was engaged in financial speculation, Enron should have been regulated like a bank. Neither conclusion is justified. Energy deregulation has brought huge benefits in lower prices and more secure supplies: energy trading will continue to grow regardless of Enron's collapse. Nor would it be wise to subject all companies with financial arms to stifling bank regulation. Enron's energy exchange was, however, explicitly exempted from oversight by financial regulators: that should be changed.

In the end, the best lessons of all will come from the mere fact of Enron's bankruptcy. Investors and bankers may learn not to trust companies that report mysteriously spectacular profit growth; auditors will be warier of bosses' pressure to sign dodgy accounts; rating agencies and regulators may be more nervous about companies that do not come clean about all their activities. In the drama of capitalism, bankruptcy plays an essential part—until the next boom.

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Religion and education in Britain

Keep out the priests

Dec 6th 2001
From The Economist print edition

Tony Blair's plan to hand over more state education to religious organisations is dangerous

Get article background

THE question of whether the minds of the young should be in the hands of the preachers has been, for many, a hard-fought matter of high principle. It is at the centre of the argument over the separation of church and state, which split France for a century or so, and which the Americans enshrined in the first amendment to their constitution. Britain, characteristically, has avoided confrontation and opted for an uneasy compromise. Around a quarter of its schools are run by religious organisations—with state funding—and the rest have nothing to do with them.

Now Tony Blair wants to boost religion's role in education. More money for schools run by “faith-based organisations” is the most controversial part of the bill to reform secondary education now going through Parliament. Protests against this measure, from atheists, agnostics, humanists, parents and members of Parliament, are escalating.

The issue is not whether people should be allowed to educate their children according to whatever religion they choose. Certainly they should, so long as they give their children a decent amount of real education at the same time as imbuing them with ancient beliefs and superstitions. The issue is whether state-funded education should be in the hands of religious organisations. It shouldn't.

Mr Blair's motives in handing over more of the education budget to the priests are unclear. It may be that, as a Christian, he thinks it is right to impose his views on other people's children. If so, he is wrong. It may be that he thinks that religious schools deliver better education than secular schools. If so, he hasn't looked at the facts very carefully (see article). It may be that he sees expanding religious schools as a backdoor way of promoting selective schools. Selection is a contentious issue for the Labour Party, and under the current system religious schools are allowed to select pupils and secular schools are not. If that is his motive, he would do better to confront the selection issue head-on, for handing over the children to the preachers is wrong in principle and dangerous in practice.

Belief is not the business of the state

Religious schools discriminate against people on the basis of their beliefs. They give preference to those who adhere to their particular form of religion, often requiring a letter from a priest attesting to parents' devotion. That explains why Britain's churches are full of the mothers of small children, stumbling their way through unfamiliar liturgies in the hope of persuading the religious authorities that they are holy enough to pass the test. A state-financed education system should cater to everybody equally, irrespective of their faith.

Every religion believes that it has a monopoly on truth. By paying for religious schools, the state is spending taxpayers' money to help schools promote one set of beliefs over another. But it ought not to be the business of the state to interfere in these matters, either by suppressing, or by promoting, particular religions. Most decent countries agree on that point these days. A few, including Afghanistan and Britain, do not.

Religion, as the world has been reminded over the past three months, is a divisive influence. Britain's

northern cities, where riots exploded this summer between Asian and white gangs, are already split along racial-cum-religious lines. Mosques are clamouring for state cash for schools just as churches are. Education based on religion tends to entrench existing divides. Anybody who doubts that should visit Northern Ireland.

Britain already has 7,000 state-funded religious schools. That is 7,000 too many. The government will not make British education better by promoting these establishments, and it will make British society worse.

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Letters

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Future prospects

SIR – Peter Drucker is right to say in his survey of the near future (November 3rd) that nobody knows what causes demographic booms and busts, but consideration of simple economics may give some indication. If we start from the proposition that procreation is a normal household activity that will increase with wealth and diminish with increasing price, much of the demographic history of the 20th century makes sense, as do many cross-country variations in fertility.

The “baby bust” of the late 1920s and the post-war “baby boom” can both be related to changes in actual and expected household income. So can the positive correlation between household income and numbers of children that existed in Britain in the 1950s and early 1960s, and seems still to exist in some Middle Eastern countries. The failure of the “baby boomers” and subsequent generations to procreate enthusiastically is consistent with being deterred by the massively increased opportunity cost to the household of women having to give up good jobs to rear children.

If there is anything in this analysis, it seems unlikely that birth rates will pick up in the West without government intervention because women's earnings are so high. Immigration is likely to offer at best a quick fix as educated second-generation families will face the same opportunity set as the indigenous population. Perhaps we should not worry because if Mr Drucker's excellent survey is representative of the work of a person in his 90s, effective active ageing policies may offer a solution to the problem of ageing populations.

John Ball
Barnet, Hertfordshire

SIR – It is puzzling that in some quarters there is talk of a demographic time-bomb. A bomb should surely involve some element of surprise, yet the changing age profile of advanced societies is well documented. The real surprise is that so much of business and government are not geared up to make the most of these changes.

Smart companies are already tapping into the “grey pound” and supporting age diversity in the workplace. The challenge for business is to meet the increasingly sophisticated demands of the grey consumer. The challenge for governments is to get right the planning for health services, pension provision and more flexible retirement.

The benefit of success will be greater voluntary involvement of older people in the community and continuing contribution to economic growth. If that does not focus the minds of governments and business strategists across the world, then the growing influence of the grey vote and grey dollar may do it for them.

Gordon Lishman
Director general, Age Concern England
London

SIR – Mr Drucker writes that in the future many of the people who work for a corporation will not be actual employees but associates, affiliates or employees of an outsourcing contractor. I would like to suggest the term “deployee” to describe this new kind of worker that will probably soon account for a huge percentage of the working population. Maybe we will see placards bearing the words, “Deployees of

the world unite!" in 20 years.

John Dutton
Montreal

Unhealthy

SIR – Unless the British electorate realises that a private economy, including health and education, is the best way forward, the National Health Service, and the public sector in general, will eventually implode just like the Soviet Union ("Walking wounded", November 24th). Can you imagine if the big supermarkets were nationalised into a National Food System? We would end up queuing for bread. Is there any reason why it should be different with health and education?

Mario Innecco
Bromley, Kent

SIR – The experiment in socialised medicine begun in 1947 is a failure. The laws of economics cannot be repealed. No government can raise enough in taxes to provide quality health care for all its people. Britain has "comparatively few new doctors". Why? A government monopoly of doctors' salaries amounts to theft of their time, labour, knowledge, skills, and yes, love. As such it is immoral. The system, based on fraud, is now collapsing from its internal inconsistencies.

Christopher Lyon
Newport Beach, California

MOX trial

SIR – The Sellafield MOX plutonium-fuel plant is, as you say, a "wheeze" to sustain the fiction that separating plutonium from spent nuclear fuel is somehow a viable 21st-century business ("With one bound", December 1st). There is a simple way to make the financial decision about whether to operate the MOX plant—privatisation.

Consultants for the British government claim that net future cash flows are worth £213m in present-value terms (excluding money already irretrievably spent, which greatly exceeds this). The government should simply auction the entire operation to the private sector, including a management buy-out if British Nuclear Fuels' executives have the stomach to stand behind their numbers. If there are worries about environmental litigation from the Irish, shaky contracts with Japanese utilities or the safety record of the Sellafield management, then let the bidders seek insurance or price these factors into their bid.

The history of the nuclear industry is laden with jargon and inflated promises, ending in the dumping of vast and open-ended liabilities on the state. Before the British government falls for the latest version of this wheeze it should see if there is anyone around who would be prepared to back the plant with their own money.

Clive Bates
London

Not so spoilt

SIR – I am dismayed to see that *The Economist* has fallen for the old cliché of the spoilt rich kid ("Under the influence", November 17th). I know Walter Hewlett well and the epithet could not be more misapplied. He has devoted his life to philanthropic and ecological causes. The real spoilt brats are the chief executives who drive down shareholder value and award themselves multi-million-dollar bonuses.

As the Hewlett-Packard share-price graph you include with your piece indicates, Mr Hewlett's opposition to the Compaq merger brought an incredible 30% increase in the price of Hewlett-Packard shares. This shows that Mr Hewlett is speaking for disaffected shareholders at large and not just for a few spoilt children.

Nathalie Farman-Farma
New York

Blair and Wodehouse

SIR – Mark Schumann (Letters, November 17th) is under the mistaken impression that Jeeves is Bertie Wooster's butler. Jeeves is his valet. If Mr Schumann wishes to pay Tony Blair a compliment by comparing him to a Wodehousian butler, he will have a somewhat difficult job: the cleverest of them, James Phipps, is a safecracker.

John Bninski
Charlottesville, Virginia

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Stage one almost done, time to start planning stage two - Fighting terrorism

Dec 6th 2001 | WASHINGTON, DC
From The Economist print edition

AP

In which war may give way to other forms of persuasion

AP

Get article background

WHERE next? Only two months after air strikes began in Afghanistan, the American administration is laying the groundwork for phase two of the war on terror. On early indications, the results are likely to dismay hawks pushing for a quick attempt to overthrow Saddam Hussein. They may also disappoint doves who want to go after terrorist groups only, and somehow leave state sponsors alone.

Understandably enough, the administration is still focused largely on the unfinished business in Afghanistan. This week saw preparations for the siege of Kandahar, the last main stronghold of the Taliban. American aircraft delivered their biggest bombing raids so far on the city (accidentally killing three American and five Afghan soldiers, and injuring 20 when a bomb went astray). American marines, together with British and Australian forces, fanned out to block off supply lines, and columns of anti-Taliban Pushtun fighters converged towards the stronghold.

Sieges of other cities have led to the retreat or negotiated surrender of the defenders, but Donald Rumsfeld, America's defence secretary, does not think this will happen in Kandahar. This is the Taliban's last stand. The alternative to surrender is to melt into the hills or fight to the death. That is what the Taliban's leader, Mohammed Omar, has instructed his troops to do.

Even a negotiated surrender, the best outcome, would not necessarily end the ground war, as events further north have shown. Around 2,500 Taliban and al-Qaeda fighters are still holding out at Balkh, near surrendered Mazar-i-Sharif. Smaller pockets of resistance have emerged near Kunduz, Herat and Kabul itself. After weeks of success, the last part of the war may well prove the hardest.

The defeat of the Taliban would send the clearest possible warning to other regimes which harbour terrorists. But in itself it would not be enough, for three reasons. First, the administration reckons the replacement of the Taliban by anarchy and warlordism might not leave America much better off. One of the lessons of September 11th is that al-Qaeda flourished not only thanks to the Taliban, but during the mayhem before them, when the organisation established itself. At the same time, the State Department fears Afghan anarchy could spill over into Pakistan—or draw the Pakistanis into the internal affairs of their neighbouring vacuum again. Hence the significance of this week's agreement in Bonn to set up an interim government of all the tribes (see next story).

Second, the overthrow of the Taliban is not only an end in itself but a means of scotching al-Qaeda. This week saw the first real evidence for Mr Rumsfeld's assertion that by hemming in al-Qaeda's leaders, America is increasing its chances of capturing or killing them. Around 1,500 Afghan fighters, with American special forces, are reported to be marching on the caves and valleys around Tora Bora, near Jalalabad, where Osama bin Laden may (or may not) be holed up. A commander in Jalalabad has also claimed that airstrikes on December 3rd injured Ayman al-Zawahiri, Mr bin Laden's deputy, and killed Ali Mahmud, one of his financial managers. The claim could not be verified.

Third, even the defeat of the Taliban and the death of Mr bin Laden would not be enough to meet George Bush's definition of victory: that is, to reduce as far as possible the chances of a second September 11th by targeting terrorist groups “of global reach” wherever they may be. After all, al-Qaeda operates in dozens of countries, would continue to do so even if Mr bin Laden were killed, and is not the only global terrorist network.

This week, America took its first small step to broaden its actions beyond al-Qaeda when it seized the assets of three charities which, it claimed, were financing the attacks of Hamas on Israel. They included one of America's largest Islamic charities, the Holy Land Foundation in Texas. But the action is in some ways a red herring, related as much to American policy in the Middle East as to phase two in the broader war on terror. In planning for that, the administration is now trying to get the sequencing right.

Senior officials distinguish between two categories of country: those they want to make an example of through military force, and those that they want to turn into models of good behaviour. Afghanistan is clearly in the first category. So, on the face of it, is Somalia—another warlord-ridden place with al-Qaeda camps on its wild border with Kenya. But poor Somalia is in an even worse mess than Afghanistan. Its 84-member government (which was barely worth the name) has just resigned, so although American military action might be needed to get rid of al-Qaeda's operations there, no Somali equivalent of the Taliban exists to blame or attack.

The best example in this category is, of course, Iraq, though the evidence that it supports global terror is sketchy (see next page). For the moment, however, an attack on Iraq is barely being discussed, and the administration seems to have decided on a different procedure for the next phase of the war: finding models of better behaviour. As Condoleezza Rice, the national security adviser, described phase two to the *Washington Post*: “We are willing to work with states that want to do better in making sure their territory and assets are not used for the purposes of terrorism.”

Who might that mean? The easiest answer is one almost begging for help to crack down on an al-Qaeda affiliate: the Philippines. Mr Bush has promised the government of Gloria Arroyo that he will increase military aid from around $2m a year to over $100m. He has also dispatched American military advisers to help her government fight a small Muslim separatist group, Abu Sayyaf. But the Philippines has been trying to crack down on Abu Sayyaf anyway, and some suspect it may be exaggerating the group's links with al-Qaeda to get American help in solving a largely domestic problem.

Two better models might be Yemen and, possibly, Sudan. Yemen had been a base for al-Qaeda long before the *USS Cole* was attacked in its harbour in 2000. But the president, Ali Abdullah Salih, now claims to be a partner in the war against terror and has been talking to the administration about a $400m aid package, with, it is said, military training by American special forces.

As for Sudan, Mr bin Laden was based there before decamping to Afghanistan. But in the past few days it has become clearer that the Sudanese government, which once supported him, was serious when in 1996 it offered to hand him over to the Americans, and even to give the FBI and CIA full access to its intelligence (an offer the Clinton administration refused). That gives some hope that the United States may, just possibly, be able to resurrect proper intelligence co-operation with the Sudanese.

But the most important, and most complicated, potential model is Iran—the country the State

Department calls the largest state sponsor of terror in the world and which is likely, in the next year, to develop the ability to produce enriched uranium. Iran, the Americans feel, has joined the campaign against the Taliban for reasons of regional power politics, not rejection of terror. But the administration thinks it may be able to help turn one into the other, either by negotiating with its government of clerics, or by using what influence it has to increase public pressure for more radical change. Obviously, that would take years, and run the risk that Iran would merely pretend to end support for terror.

In short, America seems to be committing itself to a kind of “zero tolerance” for terror. It will crack down in many little ways; it will give encouragement where it can. But it will not necessarily fight another all-out assault. The war in Afghanistan may have been one of a kind.

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Afghanistan's government

Suddenly, in Bonn

Dec 6th 2001
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An outline for power-sharing that may just work. Maybe

Get article background

EPA

The ex-king gets something too

HAMID KARZAI, a Pushtun tribal leader and military commander, had a lucky day on December 5th. Talks in Bonn between four Afghan factions agreed on an interim government which Mr Karzai would lead. Then, as his troops converged on Kandahar, he narrowly escaped death when an American bomb went astray.

The deal in Bonn, though neat, looks similarly perilous. It is a compromise between the claims of the Pushtuns (the country's largest ethnic group, to which both Mr Karzai and most of the Taliban belong) and the Northern Alliance of minority Tajiks and Uzbeks. The Pushtuns are meant to be reassured both by the nomination of Mr Karzai and by the fact that the ex-king, Mohammed Zahir Shah, will open the *loya jirga*, or tribal assembly, which will take place in six months' time. The assembly will appoint another transitional government for about 18 months, pending elections.

There are plenty of prizes for the northern allies, too. Three senior jobs will be taken by prominent Tajiks associated with the legendary Tajik commander, Ahmad Shah Masood, who was killed in September. But Burhanuddin Rabbani, the Alliance's leader and self-styled president of Afghanistan, was sidelined, apparently under pressure from the American and German governments, among others. A soothing statement issued after the meeting expressed “deep appreciation” to Mr Rabbani, currently in Kabul, for his willingness to transfer power to an interim authority.

Will he in fact do so on December 22nd, as the Bonn agreement requires? The fact that three of his senior lieutenants have been rewarded with top jobs—or rather, confirmed in the posts which they claim to hold already—limit the Alliance leader's ability to sabotage the deal struck in Germany. The trio are Abdullah Abdullah, the eloquently Anglophone foreign minister, and two comrades-in-arms of Mr Masood: Yunus Qanuni, the interior minister, and Mohammad Fahim, the defence minister. One of the new government's five deputy leaders will be a woman, Sima Samar, a doctor from the Hazara minority.

And will it all work? The best hope of putting the Bonn accord into practice lies in tying reconstruction aid to the maintenance of a “broad-based government”, as western aid-providing countries have pledged to do. But keeping the tribes content will be a struggle. On December 6th the Pushtun spiritual leader, Sayed Ahmad Gailani, called the Bonn deal “unjust”, and Abdul Rashid Dostum, a powerful Uzbek warlord, said he would boycott the government.

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Dealing with Iraq

Unfinished business

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AP

How September 11th and the early successes in Afghanistan have changed the debate in America about Saddam Hussein

BACK in 1998, when he was merely a dean at Johns Hopkins University, Paul Wolfowitz visited Capitol Hill to give some bad-tempered views to a congressional committee. This was 42 days after United Nations weapons inspectors gave up trying to make Saddam Hussein comply with all the disarmament obligations clamped on him at the end of the 1991 Gulf war. Mr Wolfowitz's target was the pusillanimity of the Clinton administration. Lacking a serious policy on Iraq, grumbled the then dean, the administration persisted in pretending that sanctions were keeping Saddam in a “strategic box”, and that the only alternative to the pretence was to march American troops into Baghdad. This, he insisted, was not true. There was a safer way to rid Iraq of its dictator.

The safer way was to help the Iraqi people to free themselves. This could be done by creating a secure enclave in southern Iraq similar to the semi-free Kurdish zone in the north. Here a provisional government, defended by American air power and special forces, could build support against the regime, seize Iraq's largest oilfield, and provide a haven for refugees and defecting soldiers. This would, confessed Mr Wolfowitz, be a formidable undertaking and not without opponents in the UN Security Council. But once America's seriousness of purpose became clear, Saddam's regime might swiftly unravel.

Mr Wolfowitz is now back at the Pentagon as America's deputy defence secretary. The vision that he and others set out three years ago has not come to pass—not, that is, in Iraq. But something like it is taking place in Afghanistan. There, America's forces have so far avoided bloody engagements on the ground. The Taliban regime has been unravelled by American air power, augmented by special forces, with local opposition armies invading from the safe enclave of territory controlled by the Northern Alliance. It has worked in Afghanistan. Could it work in Iraq? And should it be tried?

Sour triumph

More than ten years have passed since George Bush senior sent American forces to drive Mr Hussein's invading army out of Kuwait. After they did so, Mr Bush decided not to pursue Iraq's troops to Baghdad. Although he called on the Iraqi people to overthrow Mr Hussein themselves (and, he now says, confidently expected the dictator to fall), changing the Iraqi regime was never a formal aim of that war. “All of us”, Mr Bush wrote recently, “underestimated Saddam's cruelty and brutality to his own people, which keeps him in office.”

If it was right to leave Mr Hussein in office in 1991 and the decade that followed, why remove him now? Three things have changed. First, another Bush is president. As Mr Hussein allegedly tried to assassinate the senior George Bush in 1993, his son may be said to have unfinished family business in Iraq. Second, there is a recognition that the policy of sanctions and arms inspections designed to keep Mr Hussein in his “box” is failing. The inspectors had to leave in 1998 with their job unfinished. The sanctions have ruined Iraq without either weakening Mr Hussein's grip or making him take the inspectors back.

The third change is September 11th. Although an Iraqi agent is said to have twice met Mohammed Atta, the lead hijacker, in Prague, no publicised “smoking gun” yet connects Iraq with the twin towers or the anthrax letters. But Iraq and terrorism are connected in Mr Bush's mind. “If anybody harbours a terrorist, they're a terrorist,” he said last week. “If they fund a terrorist, they're a terrorist...if they develop weapons of mass destruction that will be used to terrorise nations, they will be held accountable. And as for Mr Saddam Hussein, he needs to let inspectors back in his country, to show us that he is not developing weapons of mass destruction.”

It will take more than words. Mr Hussein has proved many times that he would sooner put up with economic sanctions and military strikes than dismantle his terror weapons. After the Gulf war, the UN trussed Iraq in a cat's cradle of resolutions requiring Mr Hussein to stop developing weapons of mass destruction and accept a monitoring programme under which a UN commission (Unscom) would make sure that it remained free of them. Until 1998, the inspectors had access to Iraq, where they were able to discover much about its illicit weapons efforts and to dismantle most of what they discovered. Even so, Iraq was obstructive from the start.

At first, for example, it denied having had a nuclear-weapons programme. But between 1991 and 1994 inspectors found and dismantled a secret network of some 40 nuclear-research facilities, including three uranium-enrichment programmes, plus evidence that Iraq had begun to develop a radiological weapon (ie, a “dirty bomb”). Only in 1995, after a defector told almost all, did Iraq admit having launched a programme in August 1990 to develop a nuclear weapon within a year.

Iraq also said that it had never tried to make weapons using VX nerve agent. But in 1995 it at last admitted to having made four tons of the stuff (though Unscom thinks it had imported enough material for 200 tons). It denied having a biological-weapons programme. But then it owned up to a research programme. Later still it said that this had in fact been a full-fledged weapon programme under which it had produced botulinum, anthrax, aflatoxin and clostridium, along with bombs and warheads to deliver these toxic agents. Although required to destroy all missiles with a range of more than 150km, Iraq is believed to have hidden up to a dozen Scud-type missiles of the sort it fired at Saudi Arabia and Israel in the Gulf war.

A box full of holes

In 1998, Iraqi obstruction reached a point where Unscom's executive chairman, Richard Butler, felt compelled to pull out his inspectors. The response of the Clinton administration (with Britain in tow) was Operation Desert Fox, four days of bombing and missile strikes designed to destroy targets associated with Iraq's weapons-building activities, weaken the regime and reduce Iraq's capacity to threaten its neighbours. This was no pinprick: the Americans reckon these attacks killed or wounded about 1,400 members of Iraq's praetorian Republican Guard and other units. But Mr Hussein stayed in power; and the inspectors stayed out.

By the time of Mr Bush's election, America's policy was a mess. Ten years of sanctions had cost Iraq some $150 billion of forgone oil revenues, curbing Mr Hussein's ability to rebuild his arsenal and intimidate his neighbours. But the box in which America hoped to keep him was full of holes: Mr Hussein has enjoyed improving relations with almost all his neighbours. And the sanctions have meanwhile caused immense suffering. Although food and medicine are formally exempt, Iraq's impoverishment has on some estimates trebled the death rate among under-fives since 1990, a calamity which Mr Hussein has purposely exacerbated, refusing to order the medicines and food Iraqi children need, in order to acquire a propaganda advantage over his tormentors.

AP

Before September 11th, America and Britain, stalwarts of the sanctions policy and the only enforcers of the so-called “no-fly” zones above Iraq, faced growing isolation in the Security Council. Last week, this changed. Having previously resisted, the Russians agreed to replace the presentsanctions regime with “smart sanctions”, the UN's third attempt at adjustment. In 1996 Iraq accepted a plan that lets it use oil revenues to buy food and medicine under UN supervision. And in 1999 a resolution offered to suspend sanctions on non-military imports if Iraq co-operated with arms inspectors.

When the Kurds rose, this happened

It is hoped that the smart sanctions will come into effect next May. They will allow Iraq to import freely, except for a long list of military-related goods which its neighbours will be asked to intercept at its borders. Although Iraqi oil revenues will still be supervised by the UN, the change is designed to focus sanctions on Iraq's weapons ambitions and minimise collateral damage to the civilian economy. But will this change satisfy Mr Bush if—as seems certain—Mr Hussein continues to keep the weapons inspectors at bay?

That looks unlikely. Mr Bush has already warned Mr Hussein that if he keeps the inspectors out he can expect new punishment. And with America now fully re-engaged against “rogue regimes”, the temptation to pile military pressure on top of the sanctions is strong. But how?

Templates and temptations

On closer inspection, Iraq does not fit so easily into the Afghan template. Its battered army is still a considerable force: Mr Hussein's Republican Guard alone numbers almost 100,000 well-armed men. Vulnerable from the air, the Iraqis would not last long against an invading American army, in the unlikely event of a big one being sent to do serious battle against them. But there is no equivalent in Iraq of an Afghan Northern Alliance with the numbers, weapons or motivation to do the grunt work for America on the ground.

After the Gulf war, Iraq's Kurds rose against Mr Hussein. Swiftly crushed, they are now penned into a semi-autonomous northern enclave, lightly armed but protected mainly by the no-fly zone that extends down to the 36th parallel (see map). The chance that they might again invade Mr Hussein's heartland is small. The Kurds are divided between the rival parties of Masoud Barzani and Jalal Talabani, whose fratricidal strife in 1996 led to the collapse of CIA operations in the enclave. The two Kurdish leaders have since promised to work together, but although both are members of the Iraqi National Congress (INC), Iraq's umbrella opposition group, they also maintain links with Baghdad.

Even united, the Kurds may make reluctant liberators. All their enclave's neighbours—Syria, Turkey and Iran—have restive Kurdish minorities and would resist any change that might encourage the emergence of an independent Kurdistan. Turkey is nervous enough about the separatists of the PKK who find shelter in the existing enclave. Knowing that they will never achieve formal independence, but having enjoyed autonomy for a decade, some Iraqi Kurds calculate that they have little to gain from reintegration as a minority within liberated Iraq.

That is why advocates of a Wolfowitz-style strategy concentrate on the south, the focus of Shia Muslim opposition to Mr Hussein's predominantly Sunni regime. Like the Kurds, many Shias rose up after the Gulf war, and were crushed with the same brutality. The south is also protected by a no-fly zone, up to the 33rd parallel, but this is an area where Iraqi security forces operate openly and organised opposition is weak. So America would have to raise, arm, train and insert an opposition army more or less from scratch.

Assembling such a force from the loose confederation of opposition groups that make up the INC would take a very long time. Although America's Congress has passed an Iraq Liberation Act, which would

authorise it, the United States has not yet given any military training to Iraqi opposition groups in exile.

If the military potential of the Iraqi opposition is in doubt, so is its ability to form a coherent successor regime. In 1999, when he was still in charge of America's forces in the Middle East, Anthony Zinni, the marine general trying now to organise a truce in Palestine, warned Congress that a fragmented and disintegrating Iraq could pose greater dangers to the region than a Saddam-ruled Iraq still safely in that "box".

Some such calculation plainly influenced George Bush senior's decision not to support the Kurdish and Shia uprisings that followed the liberation of Kuwait, although he had called for them himself. A perennial worry in Saudi Arabia is that if Iraqi Shias broke loose from Baghdad some might line up with Iran, or inspire secessionist dreams among the Shias of the Saudis' eastern province. And America has long assumed (as when it "tilted" towards Saddam in the Iran-Iraq war of the 1980s) that in the zero-sum politics of the Gulf a weaker Iraq is liable to mean a stronger Iran, the other nuclear-ambitious regional power it seeks to "contain".

Apart from this, the ramifications of a renewed American attack on Iraq could well extend beyond the region. America might be hard put to win the support of many big countries other than Britain, and maybe of any. It is unlikely that NATO would again invoke Article 5, as it has in Afghanistan. An Iraqi war might thus put America back into its unilateralist box, which would not help it in the wider war against terror, and might complicate several of its other foreign-policy objectives, such as winning Russian co-operation for missile defences.

Until September 11th the military difficulties entailed in removing Mr Hussein, and the uncertainties that would follow, argued for caution. But the fairly swift successes in Afghanistan have changed the terms of debate in Washington.

Those who want to dislodge him now challenge all the preceding assumptions. Yes, Iraq has deep ethnic and religious divides, but nothing to rival the tribal fissiparity of Afghanistan, where a post-Taliban government is nonetheless beginning to take shape. Iraq's army is better at digging in than the rag-tag Taliban (it was bombed for six high-precision weeks in 1991), but America's aerial weapons are a decade cleverer than they were then. The opposition may be a shambles; but is not Mr Hussein a bloodstained dictator, hated beyond his inner circle, whom his people will gladly drag down the moment an opportunity arises? America's Arab allies, although they see Mr Hussein as a threat, say vehemently that they oppose a new onslaught on his regime, and that the Arab "street" would revolt; but once the superpower was "on a roll", as one State Department official puts it, would these allies really stand in its way?

Today the debate in Washington dwells less on whether to remove Mr Hussein than on when and how. As to how, the plan that Mr Wolfowitz set out three years ago is not the only one: assassination, from land or air, has failed before but may one day succeed. As to when, the administration's unanimous message is that there is no rush. The Afghan victory must be made secure first, and even then Iraq need not be next on the list. A harder question, on which there is less agreement, is why.

A deterrable monster?

America went to war in 1991 to rescue Kuwait and remove Mr Hussein's hand from the West's oilpipe. If American forces are now permanently in Saudi Arabia and Kuwait, this threat exists no longer. Nor—pending new evidence of an Iraqi hand in September 11th—is America's "war on terrorism" sufficient ground for war on Iraq. The regime harbours a few semi-defunct Palestinian terror groups and murders its own dissidents abroad. But Mr Hussein would have to be madder even than he is thought to be to risk international terrorism with America in its present mood. The strongest case for removing him therefore rests on his search for weapons of mass destruction, especially the biological ones that might be most difficult to track down even if the inspectors returned.

How bad would it be for Mr Hussein to acquire the nuclear or biological weapons he craves? His would not be the first nuclear-armed dictatorship; and Stalin's was surely no less mad, bad or dangerous. In North Korea, the West has relied on deterrence-cum-incentives to keep a potential nuclear menace at bay. Mr Hussein, admittedly, has shown that he is reckless as well as ruthless. He invaded Iran; he invaded Kuwait; and he fired missiles at Tel Aviv even though he knew Israel to have the bomb already. But he can also

be deterred: he never dared to use his chemical weapons against the Israelis or Americans. Besides, say some of those who counsel deterrence, an oil-rich and technically advanced country such as Iraq will one day join the expanding nuclear club no matter who is president. Why risk war now to stave off the inevitable?

These are strong arguments. But most depend on the idea that removing Mr Hussein before he acquires his weapons of mass destruction would entail many risks: a price in American lives, the possibility of leaving Iraq even worse off and the danger of destabilising America's friends in the Middle East. Before September 11th, it was accepted that these unavoidable costs outweighed the possible benefits. Now, some Americans have concluded from the terror attacks on New York that their own power does not deter every vengeful or fanatical foe, and they have concluded from events in Afghanistan that America can win wars far from home without paying a heavy butcher's bill. As much gruesome history attests, the last war is seldom a reliable guide to the next.

Smile, and be a villain

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Liberty v security

No, not quite a dictatorship

Dec 6th 2001 | WASHINGTON, DC
From The Economist print edition

AP

Is the Bush administration really imperilling freedom for the sake of security?

Get article background

DISPUTES about civil liberty, like jury verdicts, tend to be binary. Guilty or not guilty. A threat to freedom or a necessary wartime protection. George Bush's proposals to deal with suspected terrorists are just like this. On the one hand, an unholy alliance of leftists and conservative libertarians condemns almost all the measures (accusations of “shredding the constitution”, “kangaroo courts” and “summary executions” abound). On the other, law-and-order types—who include a large majority of ordinary Americans—think the proposals are, if anything, too mild.

In fact, a review of what the administration is doing supports neither hysterical opposition nor uncritical support. Some of its measures are good, some bad and some (including the military tribunals) still far too sketchy to make up your mind about.

The list of bad ones begins with **the detention of more than 600 foreigners**. The problem here is not the fact of the detentions, which are on immigration charges. People who violate the terms of their visas can be held without charge or bail until a judge rules on their case. Nor is the problem the few cases of mistaken identity. One innocent doctor was indeed rounded up because he had the same name as a hijacker and stood behind another in a queue at a bank. But some mishaps are hard to avoid at a time like this.

The real problem is that Mr Bush's attorney-general, John Ashcroft, has refused to release most of the names of those detained. This makes it impossible to judge whether the detentions are reasonable. He claims that the round-up has included some al-Qaeda members, and has thus disrupted terrorist plots; this would clearly go far to justify the detentions. But even this would not necessarily justify keeping a suspect's name secret. And, without evidence, it is impossible to judge his claim.

The real problem is that Mr Bush's attorney-general, John Ashcroft, has refused to release most of the names of those detained

Even more disturbing is the interference with **attorney-client privilege**. It has long been an axiom of American law that a defendant cannot get a fair trial if he cannot talk freely with a lawyer. On October 31st Mr Ashcroft issued an executive order allowing the authorities to monitor communications between federal prisoners and their lawyers without a court order.

The administration says it wants to stop lawyers becoming accessories to terrorist actions (remember the lawyers who were once part of America's Mafia). The power, it adds, will be used only in a handful of cases, 13 in all, and the information obtained will not be used in court.

This is feeble stuff. Eavesdropping, even if its results are not used in court, would surely hamper communications with your lawyer. Nor does snooping become acceptable because Mr Bush says it will not be done often. No legal system can rely on the self-restraint of a particular government; that is why America has a Bill of Rights. Few lawyers think the executive order will withstand scrutiny by the Supreme Court. In the case of Vince Foster, who committed suicide in the White House in 1993, the court refused to let a grand jury have the minutes of his last meeting with his lawyer, even though it could plainly do him no harm.

But other measures seem little more than common-sense adjustments to the balance between security and liberty. The Justice Department's plan to question 5,000 students from Muslim countries has been attacked as **racial profiling**, and a few local authorities have refused to co-operate. But all the hijackers and their presumed accomplices were young Muslim males. Questioning old Chinese ladies, just for “balance”, seems pretty pointless.

Other measures seem little more than common-sense adjustments to the balance between security and liberty

Congress has also passed a generally reasonable bill that extends the powers of **government surveillance**. For example, it modernises wiretapping authority to keep pace with technology (previously, you had to get a new warrant to tap a mobile telephone every time its user moved). It also seeks to give the FBI the right to “wiretap” e-mail, though it is doubtful whether the technology for this exists.

The original bill certainly included much more to protest about, including the right for Mr Ashcroft to detain foreigners indefinitely. But now only quibbles remain. Business lobbyists, for instance, worry about a money-laundering provision that obliges companies to report “suspicious transactions”—meaning any purchase over $10,000 in cash. But the really blush-making thing is the provision's name: the Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism—or “USA Patriot”—bill.

That leaves the most controversial, and woolliest, measure. On November 13th, Mr Bush issued an executive order allowing any foreigner he suspects of terrorism to be detained and tried by a special **military tribunal**. The administration says it needs some way to try suspected terrorists without disclosing sensitive intelligence information or turning the court into a target for al-Qaeda's reprisals. It adds that such tribunals have an established place in American law, since a similar body was set up in 1942 to try German saboteurs (and got the Supreme Court's approval).

Critics reply that ordinary civilian courts proved themselves perfectly capable of dealing with the terrorists who tried to blow up the World Trade Centre in 1993, and the East African embassy bombers in 1998. As for the precedent, the critics claim the 1942 process was hardly a model of fairness, and was accepted only because there was little doubt that the saboteurs were guilty; they had landed from a U-boat, armed with explosives. Today's acts of terror may not always be so clear-cut.

Kangaroo courts?

On whether special courts are needed, the administration has the better of the argument. There is a Classified Information Procedures Act which enables some evidence to be kept secret in civil courts. But in the trial of the East African embassy bombers the prosecution had to reveal that Osama bin Laden's satellite telephones were being tapped—whereupon he stopped using them, and America's spies lost touch with him. It also revealed that al-Qaeda manuals had been captured, another useful tip to the terrorists.

Patricia Wald, a former member of the Yugoslav war-crimes tribunal and a retired federal judge, claims that a war against terror is not something that ordinary domestic or international law is designed to deal with. Al-Qaeda's acts are not ordinary crimes. They are undeclared acts of war—and not a war between sovereign states, such as other tribunals have dealt with. So there is a *prima facie* case for saying that the current civil system cannot deal effectively with mega-terrorism.

The real question is not “Should such tribunals exist?”, but “What rules should they follow?” Here, the criticism becomes more serious. The tribunals will not

The real question

presume that the accused are innocent, will not allow defendants to select their own counsel, and do not have any criteria for deciding when hearings are to be open and when secret. They allow no right of appeal, and verdicts—including the death penalty—require only a two-thirds majority of the military judges.

is not “Should such tribunals exist?”, but “What rules should they follow?”

Such a dismissal of normal legal safeguards would surely justify the charge of “kangaroo courts”. America has criticised other countries on similar grounds. The idea of military tribunals worries many of America's European allies, including those thinking of extraditing terrorist suspects.

But such protests are based only on the disturbingly broad executive order setting up the tribunals. It certainly allowed such things, but it did not mandate them. The detailed rules of procedure have yet to be drawn up by lawyers in the Pentagon.

Will the final rules be much narrower? In public, Mr Bush and Mr Ashcroft have been peremptory in waving the critics aside. The attorney-general has come disgracefully close to dismissing the normal court system as a legal circus, unsuitable for the war against terror.

But the criticisms may be having some effect. In testimony to the Senate judiciary committee, an assistant attorney-general, Michael Chertoff, has promised that rules will be drawn up to guarantee “a full and fair trial”. And in an article in the *New York Times* this week the White House chief counsel, Alberto Gonzales, stepped back on one point: defendants will have the right of appeal to civilian courts (through a *habeas corpus* proceeding). He also suggested the tribunals would be used only for those captured on the battlefield; the original order says nothing of this.

In short, the tribunals are works in progress. But it seems possible that the rules will include a presumption of innocence, the need for proof beyond reasonable doubt, and the right to choose your counsel. Add the idea that the tribunals might be used only in cases where civil courts cannot operate, and the Bush administration's proposal looks less than unspeakably draconian. The final verdict, though, would await the actual trials; they had better be fair, and be seen to be fair.

The same test applies to Mr Bush's two other liberty-threatening proposals. The true injustice of not naming detainees will become visible only when the names and cases are revealed. It also remains to be seen how the courts deal with Mr Bush's clipping of attorney-client privilege. The other actions—on government surveillance and racial profiling—strike a balance between civil liberty and security.

It is fair to argue whether the balance should be tilted a touch one way or the other. Compared with previous wartime shifts—such as Lincoln's suspension of *habeas corpus*—this one is modest.

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Latinos and blacks

Time to cut the cake a different way?

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This week's victory in Houston may be the last for the old urban order

AP

Sanchez, beaten this time

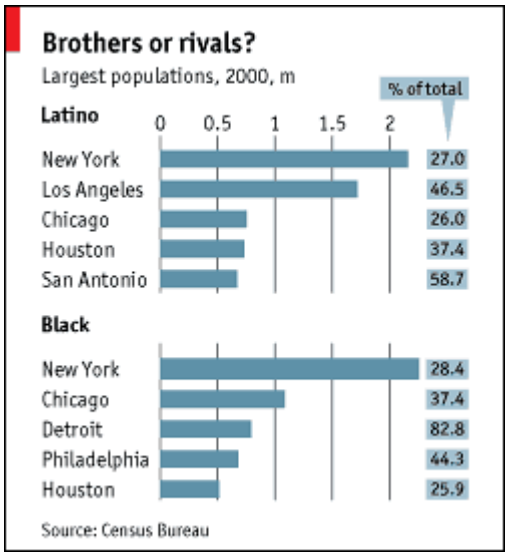
THE dogs that don't bark in the night are supposed to be more significant than the ones that do. In the past few months Latinos have failed to win the mayorships of three of the country's largest cities, New York, Los Angeles and Houston. Yet these failed Latino candidates may well tell us more about America's future than the people who beat them.

The first thing they reveal is that it is only a matter of time. In Houston, which went to the polls on December 1st, Orlando Sanchez, a Cuban-American, lost by only four points to Lee Brown, even though Mr Sanchez was a Republican in an overwhelmingly Democratic city. In Los Angeles, Antonio Villaraigosa, a former California Assembly speaker, was the front runner until James Hahn pipped him at the very last moment. In New York, Fernando Ferrer, the president of the Bronx Borough, came close to seizing the Democratic nomination from his much better known rival, Mark Green, who then lost narrowly to Michael Bloomberg.

The new Latino political machines reflect demographics. In Los Angeles Latinos make up almost half the population, in Houston more than a third. In New York they make up 27%, putting them almost level with blacks. Nationwide, the number of Latinos grew by 60% in the 1990s: they will soon eclipse blacks as the biggest minority.

This does not mean that American cities will be governed by a rainbow coalition of ethnic minorities. New York was the only city where blacks and Latinos marched arm in arm—and there Mr Ferrer's decision to embrace Al Sharpton, a bouffant-haired demagogue, alienated even liberal whites.

In the other two races the blacks and Latinos were locked in fierce conflict. In Los Angeles, four in five blacks supported the white Mr Hahn, in part because they were worried that Latinos were seizing control of the city. Latinos backed Mr Villaraigosa in similar numbers. In Houston, a large number of local Latinos, who tend to be Mexican and Democrat, voted for Mr Sanchez, a conservative Republican Cuban, out of ethnic pride. But blacks backed Mr Brown, an African-American.



There was a good deal of ethnic mudslinging in both contests. Latinos claimed that a Hahn ad linking Mr Villaraigosa to a drug dealer had racist overtones. The Democrats in Houston produced the sister of James Byrd, a black man dragged to death by whites, to denounce Mr Sanchez's opposition to a hate-crimes law.

The underlying battle is an old one: redividing the political spoils of urban America. For the past 30 years blacks and whites have divvied up power and jobs among themselves. Blacks have done particularly well out of this deal, partly because they are concentrated in urban areas, and partly because they have been deeply engaged in politics since the civil-rights movement. Now the Latinos are demanding their share—just as Jews and Italians challenged the ruling Irish for a piece of the action at the beginning of the last century.

It is unlikely that the current battle will reach the viciousness of the scraps over Tammany Hall. But they could make Democratic politics considerably more fractious—not least because of the Latinos' willingness to desert the party. They may still be disproportionately poor, but any Democrat who takes their support for granted is likely to be disappointed. In New York, 47% of Latinos picked the Republican, Mr Bloomberg.

Latinos hardly fit into the embattled Chicano stereotype once so cherished by the left. They are entrepreneurial and upwardly mobile, preferring to own their own homes and run their own businesses. They are less attached to the public sector than blacks. They are ethnically diverse. The three mayoral candidates came from three different ethnic groups—Puerto Rican, Mexican and Cuban. They may well feel that the disproportionate share of political power held by blacks is a greater injustice than the withdrawal of affirmative action programmes. At the very least, the Democrats need to engage in some delicate coalition management.

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Teenage suicide

Such a waste

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Why do so many young Americans end their own lives?

FOR half a century, America's young people have been felled by a seemingly unlikely killer: themselves. The suicide rate for Americans aged between 15 and 24 tripled between 1950 and 1994, from 4.5 to 13.7 per 100,000. Over the same period, the suicide rate for adults and the elderly actually went down. Since then, the youngsters' rate has drifted down to 11.1. Still, the number who die by their own hand remains strikingly high. Why?

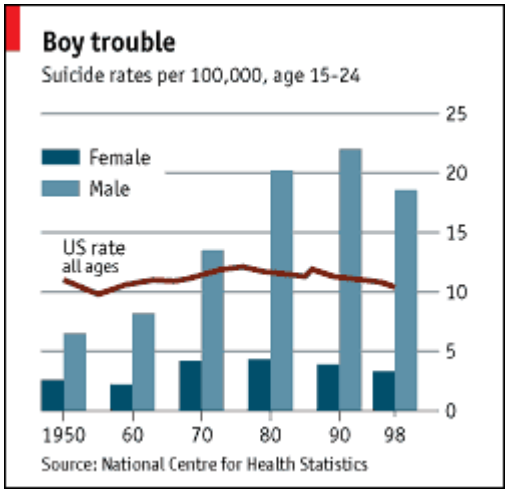
In 1998, the last year for which government data are available, suicide was the third commonest cause of death for young Americans, after accidents and murder. More adolescents and young adults killed themselves than died from all the next seven main causes of death.

Young women try to commit suicide more often than young men, but the males are nearly six times likelier to finish the job. The teenage rate for girls of 3.3 per 100,000 is nearly identical to that in Europe; but the rate for boys (18.6) is much higher than the European figure (12).

Young whites are more likely to kill themselves than blacks (though the rate for black males has increased sharply since 1980). The highest rate of all is among young Native American males: more than 40 per 100,000. There is no obvious link between suicide and income or education. Things seem worst in rural areas and the western states.

There is also, alas, a copycat factor. When suicides are reported in the press, the local suicide rate increases in proportion to the prominence of the coverage. There is, oddly, no similar effect among adults and the elderly. This is hardly new. Goethe's novel of love lost, “The Sorrows of Young Werther” (1774), was banned in parts of Europe because of a suspicion that it would encourage suicides. The American Foundation for Suicide Prevention now has guidelines warning the media not to glorify the victim, give details of the method of suicide, or make the death seem unavoidable.

Guns matter. A study has compared suicide rates in Seattle, in Washington state, with those across the Canadian border in demographically similar but less well-armed Vancouver, British Columbia. Older people in Vancouver found other ways to do themselves in; younger ones did not. Among 15-to-24-year-olds in Seattle, the total suicide rate was 40% higher, mainly because more youngsters killed themselves with guns. A coming article in the cheerful-sounding *Journal of Suicide and Life-Threatening Behaviour* suggests that one in five young people who set out to kill themselves do so impulsively, without warning. The less lethal the weapon at hand, the less likely death will follow.



But when it comes to working out why young people end their lives, much of the clarity of the research disappears. There seem to be five main factors: depression or other mental disorder; alcohol and/or drug abuse; a crisis in one's life, such as trouble at school or with the law; schizophrenia; and previous attempts at suicide.

The list helps to identify troubled individuals by focusing on visible symptoms; but it does not address the deeper causes of unhappiness. Many psychiatrists argue that the root causes lie deep in the past. Those who commit suicide, at any age, are likelier than non-suicides to have suffered abuse as children, or

been exposed to domestic violence. Chemistry may also play a part. Suicide victims often have low levels of serotonin, a brain chemical that helps to regulate mood, says Morton Silverman, a professor of psychiatry at the University of Chicago and editor of the *Journal of Suicide*. Low levels of serotonin are associated with depression; they seem to be genetically caused, though childhood abuse and other forms of trauma may also cause neurobiological changes.

None of this, however, explains why young Americans are more at risk of suicide these days than they were in 1950. “We don't know very much,” admits Alex Crosby, an epidemiologist for the Division of Violence Prevention at the Centres for Disease Control and Prevention (CDC). Lloyd Potter, a former CDC official who now works on suicide-prevention programmes, thinks that two social changes have had the greatest effect on the suicide rate: the withering of the nuclear family, and more exposure to drugs and alcohol. But, again, the evidence is not conclusive.

A recent county-by-county study by three Harvard economists, David Cutler, Edward Glaeser and Karen Norberg, found that a 2% rise in the divorce rate seems to be matched by a 2-per-100,000 increase in the youth-suicide rate. In theory, that could explain as much as two-thirds of the rise in the youth-suicide rate since 1950; but the Harvard trio advise taking such a conclusion with “numerous shakers of salt”. Other studies have found divorce to have little or no impact on suicide risk.

The use of drugs and alcohol among American youths has also increased over time, but has dipped slightly in the past few years. Many youths are drunk or high when they kill themselves; yet it would be hard to demonstrate that the suicide rate has been driven by drugs and drink.

Other variables may affect the numbers. The murder rate, to which the suicide rate tends to be related, has fallen. Since the mid-1990s, there has also been a slight decline in gun-related violence. More recently, better treatment for depression has become available; Dr Silverman speculates that the “Prozac generation” may prove less suicidal than previous ones.

Still, something can be done

For all the uncertainty, the lack of hard evidence about what causes young people to kill themselves does not mean that suicide cannot be prevented. Most suicides are preceded by two distinct developments: a set of predisposing psychological conditions (low self-esteem, for instance) and a precipitating event (such as the loss of a loved one). A successful suicide-prevention programme, argues Dr Silverman, must treat the former and control the latter.

Some recent attempts to do so have been quite successful. New Jersey and Florida have run school programmes that appear to have reduced suicide rates by half. These involve training adults—parents and teachers, but also bus drivers and cafeteria workers—to identify pupils who are at risk; educating students about how to find help for troubled friends; and looking for students who may be “quietly disturbed”. The American air force has a similar programme, which helped cut the suicide rate in its ranks from 16 per 100,000 in 1994 to 5.6 in 1999.

Just as there are factors which seem to increase the risk of suicide, so there are “protective factors” which make it less likely. These include making sure that troubled youngsters stay in contact with their families and friends, and have access to health-care services where psychological disorders and addictions can be treated. Mr Potter says that, as a rule of thumb, any programme that promotes the healthy development of children will improve the suicide rate. Everything from smoking to skipping school may be associated with a higher suicide risk. But Mr Potter adds: “Most kids who attempt suicide really do want to live.” May the wish to live tip the balance.

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A thwarted school massacre

Tell the teacher

Dec 6th 2001 | BOSTON
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It helps if the teacher's been nice

AP

Angry, young and armed

MUCH has been made, since September 11th, of the argument that American youth has shed its nihilism and turned towards some greater common purpose. Last week police in the coastal town of New Bedford, Massachusetts, arrested five teenagers and accused them of plotting a bloody massacre at their high school. The suspects allegedly planned to smuggle guns, bombs and grenades into the school, kill as many teachers and fellow students as they could, and then turn their guns on each other. “Just imagine another Columbine, but at New Bedford High,” one of them told the police.

If the New Bedford conspiracy proves genuine, it would point both to what has been done to improve security at American schools and how hard it is to complete the job. After the killings at Columbine High School in Colorado, in 1999, a policeman was assigned exclusively to patrol the New Bedford school. His knowledge of the students paid off as he worked, over several months, to uncover the plot. Although the police made some mistakes (in October they found a partly made bomb in a student's house, but threw it away), they managed to act decisively before disaster struck.

Since the teenagers' arrest, all the familiar theories have been rehearsed: broken homes, violent films and video games, easy access to firearms, a longing to catch the journalists' attention. But, at bottom, the New Bedford suspects' grievances were the age-old complaints of adolescence. They spoke of themselves as “freaks”, and hated those who teased them: sneering “preppies”, bullies, Latinos, blacks. Searches of their homes turned up pictures of Hitler, shotgun cartridges, a voodoo doll with a noose.

Plenty of teenagers feel like this. Around one in ten schoolchildren is regularly bullied, says Nancy Mullin-Rindler, director of the (yes, really) Project on Teasing and Bullying at Wellesley College. Although conventional wisdom once brushed off such experiences as “character-building”, people now worry about an even more violent backlash. Ms Mullin-Rindler suggests strict discipline and classroom lessons in bullying-prevention.

She also stresses the importance of trust between students and adults. The schools least troubled by aggression, she says, are those with that link. New Bedford is a case in point. The alleged plot was thwarted because one of the conspirators, a 17-year-old girl, told the story to a teacher who had treated her kindly. Who knows how many lives were saved by a bit of friendly understanding?

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Lexington

Daschle's Mitchell process

Dec 6th 2001
From The Economist print edition

How to outmanoeuvre two Bushes in ten years

GEORGE BUSH may be pulverising the Taliban in Afghanistan, but back home in Washington, DC, he is facing a much tougher enemy. Having taken to their caves after September 11th, terrified that any criticism of the commander-in-chief might look unpatriotic, the Democrats are on the offensive once again. On the electoral front, they have marched deep into Republican territory by capturing the governorship of Virginia, they have hung on to the mayor's job in Houston, and they have put a sleeper in charge of New York city. But they have done something even more important than all this. They have come up with a battle plan for taking on a wildly popular war president: the Mitchell plan.

These days George Mitchell is synonymous with the Northern Ireland “peace process” and the Middle East “plan”. But in Washington he is still remembered as the most successful leader the Democrats have had in the Senate since Lyndon Johnson—and as the man who destroyed the first Bush presidency.

Mr Mitchell's genius was to make a sharp distinction between foreign and domestic affairs. He gave George Bush senior full credit for the war to rescue Kuwait. But he made sure he got no credit whatsoever on the domestic front, bottling up his domestic agenda, forcing through Democratic policies and making sure Mr Bush got the blame for the recession. So long as the war continued, the president's popularity was sky-high; but, as soon as the war ended, the president's glory ended with it.

Tom Daschle, the current Senate majority leader, was Mr Mitchell's *consigliere* during the deconstruction of the first Bush presidency, and remains in close contact with his old boss. He has, grumble the Republicans, the same Mitchell gift for hiding partisan ruthlessness behind mild manners and apparent openness. And he is now busy reviving the Mitchell strategy.

Listen to Mr Daschle on the president's war leadership. He is doing “a brilliant job”, “spectacular”, “as good as it gets”. But then look at what Mr Daschle does on the domestic front. Mr Bush has pleaded with Congress to pass just three measures before it adjourns for the year: the Trade Promotion Authority, an energy bill, and an economic stimulus package. Mr Daschle has not been helpful on any of them; instead, he has focused his energy on a farm bill, which the White House opposes, and a railroad workers' retirement bill, which nobody wants except the unions. And he has cleverly turned his own party's voracious appetite for spending into a deal-buster for Mr Bush. Senator Bob Byrd's demand for an extra $15 billion of spending has become a sticking point on the stimulus package. A fortnight ago Ted Kennedy and Mr Bush shook hands on the education bill in the Oval Office. Now Mr Kennedy has

suddenly discovered that he needs a little bit more money before the bill is ready.

Mr Daschle is also preparing the ground on the economy. This is the “Bush recession”, he argues (despite the fact that it started a mere six weeks after Mr Bush came to office), the result of “selfish and irresponsible” tax cuts that lined the pockets of the rich while driving the country's finances back into deficit.

Can the Mitchell strategy work again? One problem for Mr Daschle is that the son is a much tougher opponent than the father—not least because he has made such a point of studying his father's failures. Bush senior had almost no interest in domestic policy. Junior ran for office on a domestic agenda. Senior alienated his natural supporters with a tax rise. Junior's first priority was to produce a tax cut. Senior often seemed too gentlemanly to be in politics. Anyone who regards the son as gentlemanly should ask Jim Gilmore, who has just been turfed out of his job as head of the Republican National Committee.

However, even if the son is better prepared, this does not mean he is invulnerable. Yes, Mr Bush took time off from being commander-in-chief this week to campaign in Florida for his stimulus package; but that was the first time Mr Bush has visibly focused on domestic policy (apart from security) since September 11th. The problem with being a war president is that you have no choice but to spend most of your time above the local fray. Mr Bush's top priority is inevitably to keep the nation united behind the war. Some Republicans have criticised Mr Bush for refusing to campaign for their candidates or appear at fundraising meetings. But if he tries to combine being a war president with being a partisan fighter he may end up failing in both roles. When Franklin Roosevelt campaigned for Democrats in 1942, they lost 45 House and nine Senate seats.

Mr Bush is not the only senior Republican to be distracted from the home front. In previous wars, the vice-president has usually taken over domestic issues; but Dick Cheney, a former defence secretary, is utterly absorbed by the war. Josh Bolten, the head of the president's domestic policy staff, is also focusing on the aftermath of September 11th.

Domestic politics may be drifting in Mr Daschle's direction anyway. For 40 years America has seen a relentless decline of faith in government—a decline that accelerated the rise of Reaganism and held Clintonism in check. Since September 11th, a belief in the state's power to do good has returned, and the Democrats are hellbent on stretching it to cover more than just national security. A leaked Democratic memo recently argued that Mr Bush is much more vulnerable than he appears, particularly if the Democrats line up behind a programme of government activism designed to build a “national community”.

State-sponsored communitarianism should be a hard sell. But the Republicans are doing little to push the domestic agenda their way. Behind the scenes, Democrats are getting more confident by the day. Back in 1992 the Democratic presidential field was so feeble that an unknown governor from an obscure southern state seized the nomination. This time, several prominent Democrats hope to take on Mr Bush—not least that nice Mr Daschle. The *consigliere* may yet become the *capo di tutti capi*.

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Argentina's economy

Strapped for cash

Dec 6th 2001 | BUENOS AIRES
From The Economist print edition

Bank controls will worsen the recession—and the IMF has pulled the plug on Argentina's currency board

Get article background

ARGENTINES are hardly neophytes when it comes to living through economic crises. So, after the government last weekend imposed exchange controls and restrictions on cash withdrawals from bank accounts, the reaction was one of resignation and quiet anger rather than disorder. But the measures are another blow, both to Argentina's slump-struck economy, and to the efforts of President Fernando de la Rua's government to persuade investors that it can stave off a debt default and maintain the currency board that pegs the peso at par to the dollar.

The controls mean that Argentines can withdraw only $1,000 per month in cash from their bank accounts. All other payments must be made by cheque, credit or debit cards. Money cannot be transferred abroad without the approval of the Economy Ministry. Argentine tourists can take no more than $1,000 in cash abroad (amended in midweek to $10,000). Customs officials have already started groping travellers in search of excess cash.

The government decided to act when it saw the outflow of money that has reduced bank deposits by around a fifth since January turn into a full-scale run (see chart). On November 30th, $1.3 billion fled the banks. The central bank's net reserves slumped by $1.7 billion.

The measures also nudged Argentina further towards adopting the dollar, something that Mr de la Rua has said he would do rather than devalue. They decree the abolition of loans in pesos, and oblige banks to allow customers to change their peso deposits into dollars at par, free of charge. Although at least 75% of loans and deposits are already dollar-denominated, Miguel Angel Broda, an Argentine economist, says the latest measures will boost that figure by between 5% and 10%.

Speculators, economists and the IMF

Sadly for Domingo Cavallo, the economy minister, the bank run came just as he had successfully completed the latest step in his battle to restore Argentina's creditworthiness. Local banks and pension funds had agreed to swap high-yielding bonds for loans paying 7% interest, saving $4.5 billion in debt payments next year.

So what triggered the bank run? Mr Cavallo blamed foreign economists, who have questioned his strategy, but mainly “speculators”. They sold the peso short, amid rumours of a devaluation, driving up interbank interest rates to 1,000%. But there were other reasons. First, the central bank ordered a maximum interest rate of 7% on peso loans, in a misguided attempt to decree confidence. The predictable result was a further reduction in credit.

Second, Mr de la Rua's people tried and failed to prevent the Peronist opposition, victorious in a congressional election in October, from imposing one of its own, Ramon Puerta, as president of the Senate. Since the vice-presidency is vacant, Mr Puerta would be next in line for Mr de la Rua's job in the event of his resignation or impeachment—possibilities increasingly being discussed by the opposition.

Last, and most important, it became apparent that Mr Cavallo could no longer count on the support of the IMF, which has helped Argentina with loan arrangements amounting to $48 billion in the past year. The IMF's worries arise partly because the shrinking economy and consequent slump in tax revenues mean that Mr Cavallo has failed in his much-trumpeted plan to cut the fiscal deficit to zero this year.

On December 5th, the Fund said that it was “unable at this stage to recommend completion” of its review of Argentina's loan programme. Translation: it will not release the last tranche of its latest loan, worth $1.3 billion, unless the government either adopts the dollar, or devalues. Without the IMF money, the government would have to dig further into its reserves. Even so, it could meet its obligations only until “the middle of the first quarter”, according to a report by Credit Suisse First Boston, an investment bank. Mr Broda doubts the country could hold out even that long, observing that the reserves are also being used to shore up the banks and finance the fiscal deficit. But he hopes that pressure from European directors will see IMF financing restored.

Ever optimistic, the government says that the exchange controls will have several good effects. Since wages must now be paid via a bank account, the banking system stands to be developed and extended, thus compensating banks for their losses on the debt swap. At present, only one Argentine in four has a bank account. Second, the measures may cut tax evasion, by forcing the “informal” economy (worth perhaps $80 billion, or around one-third of GDP) to go legal.

But the more likely effect of the squeeze on cash is to deepen the recession. Claudio Maroni, who owns a corner shop in a middle-class district of Buenos Aires, says he cannot afford to install credit- or debit-card facilities, and has no plans to open a bank account. “With everything that has happened in this country, I don't trust the banks,” he explains. Mr Maroni says that sales in his shop have crashed since the cash restrictions were imposed.

The government is still hoping that the bank controls will give it the time to carry out a “voluntary” debt restructuring with its foreign creditors in the new year. Meanwhile, it must square the IMF and win opposition approval for next year's budget. For Argentina's government and for its people, this will be a bleak Christmas.

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Canada and the United States

Toughening up

Dec 6th 2001 | OTTAWA
From The Economist print edition

New security measures are aimed at reassuring the neighbours

WHEN George Bush declared war on terrorism in September, Canada's prime minister, Jean Chrétien, responded that his country would “go all the way” with its neighbour and closest economic partner. But as Canada's Liberal government scurries to beef up security, not all of its citizens are happy. A clutch of anti-terrorism measures are close to approval by Parliament. But critics claim that they tip the balance too far towards public security at the cost of civil rights.

Two of the clauses in an omnibus anti-terrorism bill are particularly controversial. One allows police to make preventive arrests when they suspect someone of planning terrorist acts. Another requires suspects to testify before a judge, even if they have not been charged with a crime. The critics won one concession from the government: it amended the bill so that these powers would remain in force for five years only. A Senate committee had recommended that the whole bill should be subject to this “sunset” clause.

There has also been grumbling that the bill does not appoint a parliamentary officer to monitor public-security legislation (such officers watch over language policy, privacy and freedom of information). The strongest complaint came from the information commissioner, John Reid, who is a former Liberal MP. He says that provisions in the bill that allow the government to suppress “information of national importance”, both in court and under freedom-of-information procedures, are a crippling blow to his office.

Even so, the Senate is expected to complete approval of the bill before Christmas. It is reinforced by other stern measures, partly taken in preparation for next summer's G8 summit, due to be held at Kananaskis, a remote resort in the Rockies. One gives diplomatic immunity to foreign delegates attending such meetings. When combined with a provision in the omnibus anti-terrorism bill, this means that any protesters who harmed these dignitaries could be charged with terrorism. A second gives ministers the power to designate “military security zones”. This measure is designed to protect nuclear plants and ships. But as Art Eggleton, the defence minister, explained, it could be used to seal off a wide area around Kananaskis.

At the same time, Canadian and American officials are stepping up security along what has traditionally beeen the world's longest undefended border. On December 3rd, Canadian ministers met John Ashcroft, the United States' attorney-general, at the Detroit-Windsor border crossing to sign several security agreeements.

Under these, 600 American national guardsmen will patrol crossings in a dozen states. They are there “to facilitate the border, not to fortify it”, said Mr Ashcroft. But American officials have made plain their suspicion that Canada's lengthy appeal procedure for refugee claimants offers terrorists a haven. The two countries will deploy joint teams to try to intercept illegal immigrants, and they plan to harmonise visa requirements. Most of the refugees reaching Canada come through “safe” countries—usually the United States. The agreement would allow Canada to return those it suspects to that “safe” country.

The big incentive for Canada in such measures is to reduce the long delays for security checks encountered by trucks heading south. With 85% of exports going to the United States, these crossings are Canada's lifelines—to be kept flowing even at the cost of some other freedoms.

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Colombia's conflicts

Guerrillas—or terrorists?

Dec 6th 2001 | BOGOTA
From The Economist print edition

A colder climate for armed rebellion

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EPA

Another victim of paramilitary terrorism

NOWHERE in Latin America does the “war on terrorism” have more resonance than in Colombia. For much of the time since President Andres Pastrana launched peace talks with the FARC guerrillas three years ago, the rebels have enjoyed a degree of international tolerance. Foreign diplomats greeted guerrilla commanders warmly at meetings in the jungle haven granted them by Mr Pastrana. A FARC delegation even toured Europe. But since September 11th, the outside world is no longer in the mood for such pleasantries. The FARC, in common with its smaller cousin, the ELN, and the right-wing paramilitary vigilantes who oppose them, is on the United States' official list of terrorist organisations. And it is starting to feel the consequences.

The European Union has said that it will no longer issue any visas to members of the FARC. Colombia's army has stepped up surveillance of the FARC's 42,000-square-kilometre (16,000-square-mile) jungle enclave. The air force is flying over it, and the army patrolling the edges. The FARC's leaders, however, say they will not resume talks until this surveillance stops, and until the government says they are not terrorists.

The country's rightist paramilitaries are being ostracised abroad, too. The State Department announced recently that it had suspended the American visas of four Colombians linked to them, and blacklisted 40 others. But the paramilitaries show no sign of easing their bloody efforts to ensure that no peace process moves forward as long as they are excluded from it.

In October alone, the paramilitaries killed nearly 200 civilians they accused of collaboration with the guerrillas. The dead included two congressmen. Last weekend the gunmen kidnapped a trade-union leader. After putting him on “trial”, they declared him a guerrilla and killed him.

Only the ELN appears to have understood that life will inevitably get harder for it after September 11th. This group regularly blows up oil pipelines and electricity pylons, as well as staging mass kidnappings. But four months after cutting contact with the government, on December 1st it agreed to restart talks.

Any real progress will have to wait until after the presidential election in May. Some believe that the changed international climate will persuade the FARC to negotiate seriously. Until it does, “the world is going to isolate the FARC, because the world is radically against the use of violence as a political instrument,” says Horacio Serpa, who according to the polls is Mr Pastrana's likeliest successor. But pessimists say that the FARC has never taken much notice of the outside world, and neither have its paramilitary opponents.

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Peru's new government

Teething troubles

Dec 6th 2001 | LIMA
From The Economist print edition

A tough country to govern

EPA

Headaches for Toledo

THE state rooms of the presidential palace have been elegantly redecorated, but Alejandro Toledo, the official tenant, seems ill at ease. And not without reason. In the four months since he took office as Peru's first democratic president of Indian blood, Mr Toledo's popularity has plunged. According to Apoyo, a polling firm, only 32% approve of the president (down from 59% in August) while 55% disapprove (up from 12%). That is only in part a result of the difficulty of governing Peru.

Mr Toledo was elected on a wave of popular gratitude at his tenacity in confronting the authoritarian regime of Alberto Fujimori. Now he seems like a man besieged. He alleges that his official residence (where he refuses to sleep) is alive with agents of Vladimiro Montesinos, Mr Fujimori's jailed spymaster. Mr Toledo complains that he lacks an intelligence service capable of rooting out the moles. He also says that radical leftists are taking advantage of Peru's newly restored democracy to destabilise his government.

Cleaning up the mess left by Mr Fujimori was never going to be easy. After four years of little or no growth in employment, Peruvians are impatient for the jobs Mr Toledo promised to create. His government has been sidetracked by minor issues, blown up by the newly zealous media. These include alleged nepotism (a nephew and a niece have cosy government jobs) and his government's decision to fix his salary at an over-generous $18,000 per month (later cut to $12,000).

These have obscured some genuine achievements. Mr Toledo has a better image abroad than at home. A team headed by Javier Perez de Cuellar, a Peruvian former UN secretary-general, has raised over $1 billion in foreign aid to finance Mr Toledo's job-creation programme. Peru has agreed on terms with the IMF for a new loan. And there are signs that the economy is at last reviving. Electricity consumption has risen sharply, and manufacturing employment has edged up. In September, GDP rose by 2.3%, compared with the same month last year, helped by the start-up of Antamina, a big foreign-operated copper and zinc mine. The government hopes for economic growth of 4% next year.

Yet Peru remains a deeply troubled country. The spectre hovers of Mr Montesinos and his web of corruption (more than 900 people are already identified as having received bribes). Hardly a day passes without some new revelation, on tape, of bribery, extortion or racketeering, involving once-respectable judges, army generals, electoral officials, politicians, media barons or businessmen.

In a controversial move, the government is planning to cancel the licences of Peru's two biggest television stations, whose fugitive owners took money from Mr Montesinos. Meanwhile, street protests in Lima and other cities are becoming more aggressive. Workers sacked under Mr Fujimori's regime demand reinstatement, remote communities clamour for the roads Mr Toledo promised them, and victims of past injustice or brutality queue up to register claims against the state.

Under these pressures, Mr Toledo, who lacks a majority in Congress, could find it hard to stick to the fiscal targets agreed on with the IMF. He is looking for new allies. He is seeking broad agreements with Alan Garcia, his politically more experienced rival in this year's election, and with other opponents, in an effort to ensure the country will be governable. If these talks fail, however, Mr Toledo's teething troubles could turn into something worse.

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St Lucia's election

The Caribbean Blair

Dec 6th 2001 | PORT OF SPAIN
From The Economist print edition

Another triumph for New Labour

IN ST LUCIA'S capital, Castries, the street party after the December 3rd election lasted until three in the morning. The voters gave a second landslide victory to Kenny Anthony, the Labour prime minister. But he missed the fun, home with flu. The next day, he decreed, was a public holiday, for “reflection”, and perhaps for recuperation too.

With 160,000 people, St Lucia is the most populous of the island countries that make up the Organisation of Eastern Caribbean States. It has a successful tourism industry, and is also rather better governed than most, as the voters appear to have concluded.

In May 1997, Mr Anthony, then a smart and youngish (46) lawyer, won his first election as Labour's new leader, with 16 of the 17 seats. That ended the party's 15-year spell in opposition, which started when right- and left-wing factions of “Old Labour” tore themselves to bits. Mr Anthony's “New Labour” meant a shiny young cabinet, with two women, closely-argued budgets full of new ideas, and good relations with the island's businesses.

His ministers have committed a couple of gaffes. But unlike some neighbouring governments, Mr Anthony's has not courted Libyan cash, and has steered clear of embarrassing offshore-banking scandals. Not all is easy. Rightly or wrongly, Labour is blamed by some for the banana industry's troubles. The right-wing United Workers' Party this week won back two seats in the island's east-coast banana belt. Another worry is voter turnout, down from 67% in 1997 to 53% this time. Party stalwarts blame complacency. Sounds familiar?

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Sri Lanka's election

A vote for peace?

Dec 6th 2001 | COLOMBO
From The Economist print edition

Sri Lanka's new government may try harder to talk to the Tigers

EPA

Get article background

THE campaign was ugly. Fourteen people died on election day, bringing the total dead for the campaign to around 60. Tens of thousands of Tamils, the minority group who live mainly in Sri Lanka's north and east, were barred from voting. The governing People's Alliance did its best to fan the fears of the Sinhalese majority and demonise the opposition as a tool of the separatist Liberation Tigers of Tamil Eelam. But the bullying had limited effect. The opposition United National Front (UNF), led by Ranil Wickremesinghe, appeared to have ousted the People's Alliance as the largest group in parliament. It looked possible that it had even won a majority, though the result was close, and confused. If it falls short, the new king-makers may just turn out to be an alliance of parties that take their cue from the dreaded Tamil Tigers. Jayadeva Uyangoda, a political scientist at the University of Colombo, calls the result “an entirely new realignment of political forces”.

Whether that will produce entirely new thinking on the main issues, the 18-year-old war with Tamil separatists in which more than 60,000 Sri Lankans have died and the frail condition of the economy, is far from certain. Although the People's Alliance has been beaten, its leader, Chandrika Bandaranaike Kumaratunga, remains president until 2005. She hates Mr Wickremesinghe and still holds some high cards. The scale of UNF's success makes it less likely that she will be able to use the month between the election and the convening of parliament to poach its allies or invite someone other than Mr Wickremesinghe to form the government. Will she, however, give up the cabinet portfolios, including defence and finance, that she now holds herself?

Some people in the UNF would like to use their victory to impeach Mrs Kumaratunga, or abolish the executive presidency itself. If both sides decide against being bloody-minded, the mood could brighten. Few matters of principle divide the parties. Mr Wickremesinghe, a former prime minister, does not have the president's charisma, but does have a reputation for competence, especially in economic matters, that she lacks. “He's not a person who grabs and does everything by himself,” says Jehan Perera of the National Peace Council, an NGO. Cohabitation could be an opportunity for them to co-operate on the economy and the war.

There are indications that the Tigers are more interested in co-operation than usual. Al-Qaeda's crimes have made the world unfriendlier for groups that deliberately kill innocents for political ends. Canada, home to a large Tamil population that provides much of the Tigers' money, recently branded it a terrorist organisation, as have the United States and Britain. The annual “Heroes' Day” speech on November 27th by the Tigers' normally implacable leader, Velupillai Prabhakaran, was less martial than usual. Tamils want “neither separatism nor terrorism”, he said.

The election makes it more likely that this hint of progress will be built upon. Mr Wickremesinghe has long sounded more willing than the president to deal directly with the Tigers. He favours an “interim administration” for the Tamil majority in the north and east, in which the Tigers would presumably have a role. Mrs Kumaratunga's plan was to bring in a new constitution that would give the region more autonomy and then get the Tigers, humbled, she hoped, by her army, to accept it. Mr Wickremesinghe also seems more willing than the president to lift the ban on the Tigers, its main demand for entering peace talks brokered by Norway.

The election has given the Tigers a new sort of clout in Colombo. Four Tamil parties, all of them past victims of the Tigers' policy of assassinating moderates, joined to form the Tamil National Alliance, which trounced the Tamil party backing Mrs Kumaratunga in the north and east. They agree that the Tigers should represent Tamils in negotiations with the government. For the first time, the Tigers have something akin to a political wing with seats in parliament. Some people now worry that Tamil parties will invite suicide bombers into parliament, not unreasonably in light of the Tigers' murderous habits. Just what role they will play depends largely on how badly Mr Wickremesinghe needs them. If he falls short of a majority in the 225-seat parliament, he may find himself depending on the Tamil National Alliance to make up the numbers. That would presumably sharpen his inclination to negotiate.

What happens now, though, is still to an extent up to Mrs Kumaratunga. She was punished in part because the economy is set to shrink this year for the first time in almost half a century and in part because her high-handed ways alienated former allies, especially those representing Muslims and the Tamils of central Sri Lanka. Her appeals to Sinhalese nationalism failed. Her main prospective ally, the Janatha Vimukthi Peramuna, which manages to combine left-wing economics, right-wing nationalism and a liberal fondness for constitutional propriety, did not do well enough to compensate. She may now face a choice between working with Mr Wickremesinghe and trying to claim credit for any progress he makes, on the one hand, and working against him and hoping he will get the blame, on the other. That she is badly weakened makes it likely she would choose to work with him.

This would be an improvement. For the seven years of Mrs Kumaratunga's tenure so far, Sri Lanka's fate has been in the hands of an increasingly authoritarian president and a reclusive terrorist. Now they are joined by a technocrat who inspires little enthusiasm but some trust. Perhaps it will make a difference.

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Afghan refugees

Death by bureaucracy

Dec 6th 2001 | HERAT
From The Economist print edition

The starving are kept waiting for want of official registration

EPA

Papers, please

THE World Food Programme expects soon to be able to supply the hungry Afghans at Maslakh, a vast camp on the outskirts of Herat, western Afghanistan's biggest city, with enough food to last them the winter. Foreign aid agencies are queuing up to help Iran's Red Crescent meet the needs of the inhabitants of two smaller camps, Makaki and Mile 46, which Iran has set up a few kilometres inside southern Afghanistan. But, for the moment, children and old people are dying of hunger and cold in at least two of the three camps—at Maslakh, at a rate of perhaps 20 every day. The able-bodied may follow.

To receive the food and shelter for which they have travelled long distances, these migrants must register with the aid agency that runs the camp they are trying to enter. But tens of thousands of people at Maslakh, and some 2,500 at Makaki and Mile 46, have been unable to do so. As a result, many are sleeping in the open, in sub-zero temperatures, on an empty stomach, while those lucky enough to have registered get food, albeit a modest amount, together with blankets and tents or huts.

Registration at Maslakh was halted during the American bombing of northern Afghanistan. The consequences were not too bad; food was available for much of that period, and the camp's population went down, perhaps to 150,000, despite the entry of frightened members of the Taliban. Since November 12th, when Northern Alliance forces took Herat, a spurt in arrivals has caught aid workers unawares. In the past ten days, the rate of arrivals at Maslakh has reached some 1,000 a day. Registrations are slow. The unregistered underclass grows.

Local staff working for the International Organisation for Migration, which runs the Maslakh camp, restarted registration about a week after Herat fell. But foreign staff trained for such work have not yet received security clearance from their UN bosses to go to Herat. The registration was held up by fears that among the genuinely displaced people were “cheats” from Herat itself. As they are weeded out, there are fears that people in genuine need are being rejected, too, sometimes with tragic results. The “dislocation of decision-making” caused by the delayed return of foreign staff has “certainly resulted in avoidable deaths”, says Siobhan Isles, who works for Médecins Sans Frontières.

At Makaki and Mile 46, the suffering is less spectacular, but even more avoidable. When Iran set up these camps, the UN refused to have anything to do with them, arguing that they should have been put on the Iranian side of the border. The UN's undeclared rationale, that Iran regarded the migrants, many of whom are Taliban-supporting Pushtuns, less as a humanitarian than a security concern, seems to have been borne out. Ever since the expulsion of most Taliban forces from the province of Nimruz, where the camps lie, the Red Crescent has encouraged the migrants to go home, and has refused to register new arrivals. The trouble is that home for thousands of these people is the besieged city of Kandahar, and the drought-hit province of Helmand. They cannot go.

It was only after the death of two children at Mile 46, on December 2nd, that the Red Crescent at last allowed foreign organisations to provide limited food supplies, for just a week, to people who had not been registered. When that week is over, the providers will hope to negotiate a second week, and so on. Furthermore, Bo Schack, who works at the UN's refugee office in Tehran, says that Iran has reneged on an undertaking to suspend the deportation of Afghans living illegally on its territory. On November 29th, around 250 Afghans were deported from the southern city of Kerman. Few would be surprised if they were now at Maslakh.

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Taiwan's Kuomintang

On the brink

Dec 6th 2001 | TAIPEI
From The Economist print edition

A shattering defeat for Asia's richest political party

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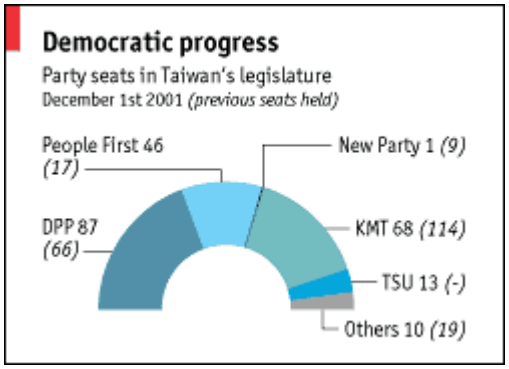

TAIWAN'S Nationalist Party or Kuomintang (KMT), the oldest, once the most powerful and still the richest party in East Asia, is in danger of political oblivion. In the parliamentary election in Taiwan on December 1st, the KMT lost its majority for the first time in its history, ceding almost half its seats. This compounded the humiliation it had suffered in the presidential poll last year at the hands of the then opposition Democratic Progressive Party (DPP). Its prospects for a return to power look decidedly slim.

The KMT's lacklustre chairman, Lien Chan—who came an ignominious third in the presidential race—tried to put a brave face on his party's latest defeat by emphasising that it remains the largest opposition force in parliament. So it does, but with a mere 68 seats, compared with the 123 it captured three years ago. And its grip on some of those seats is tenuous. It is widely expected that several more of the party's legislators will defect from its ranks in the weeks ahead.

What has Mr Lien done wrong? The answer is nearly everything. Most importantly, he has moved his party away from the popular centre ground now occupied by the DPP, which gained 87 of the 225 parliamentary seats—up from 66 in 1998. The DPP emphasises Taiwan's separate identity from the Chinese mainland and plays down the need for political integration with China. Under Mr Lien's predecessor, ex-President Lee Teng-hui, the KMT occupied that ground and kept the DPP at bay. But personality clashes within the KMT leadership shattered its unity and led to its loss of the presidency. Perversely, Mr Lien then re-emphasised the party's commitment to reunification with China—not a vote-winner for the majority of islanders who think of the Chinese as distant cousins at best, and menacing ones at that.

Another of Mr Lien's mistakes was to use the KMT's parliamentary majority to make life difficult for President Chen Shui-bian and his ruling DPP in the legislature. Since Mr Chen was elected president in March 2000, the island has suffered the most severe economic decline in its modern history—largely thanks to plummeting demand for its high-tech exports. Many voters have accused the KMT of exacerbating these difficulties with needless obstructionism in the legislature. At one point, it even tried to impeach the president, which was seen as nothing but spite.

The KMT can draw little comfort from the strong performance of Taiwan's third-biggest party, the People First Party, even though the two are part of what Taiwanese political commentators call the “pan-blue alliance”, which is made up of parties that support eventual reunification with the mainland. True, the success of People First is evidence of some voters' willingness to back pro-unification politicians as long as they are charismatic. Its popular leader, James Soong, is a former KMT governor of Taiwan province who was expelled from the party in 1999 and formed People First as a splinter group in March last year. He came second in the 2000 presidential poll and his party took 46 seats on Saturday, more than doubling its tally of members of parliament. But its alliance with the KMT is an uneasy one at best.

The KMT's one hope for victory in 2004 might be Mr Soong's return to the fold. A rule introduced by Mr Lien after Mr Soong's expulsion bans any former member from becoming party chairman. Rules can be revised, but since Saturday's election Mr Soong himself has rejected the idea of any merger of his party with the KMT. This is probably sensible. It is likely that more KMT legislators will defect to People First as

their own party flounders in the wake of its electoral setbacks. Mr Soong also knows that the KMT suffers from a severe image problem as the party responsible for decades of corrupt, authoritarian rule both on the mainland and, after 1949, in Taiwan.

The KMT has possible charismatic leaders of its own, but if Mr Soong were to run against them in a presidential race, the pro-unification camp would be split and Mr Chen would again be the likely victor. The most popular KMT politician is the mayor of Taipei, Ma Ying-cheou, who defeated Mr Chen in the election for that post in 1998. Also widely respected is a former foreign minister, Jason Hu, who was elected mayor of Taichung city on Saturday.

Unless he plans to return to the KMT, Mr Soong does have at least one objective in common with Mr Chen. That is to strip the party of its enormous wealth—estimated to be more than $2 billion—which many politicians say gives it an unfair political advantage. The KMT has never been shy about sporting its money. Its new headquarters, opened just three years ago, occupy a lavish 12-storey marble building in a prime downtown position. The walls around its forecourt curve enticingly towards the presidential palace opposite. The DPP and others accuse the KMT of acquiring its assets by exploiting its power during its decades in office, though the KMT denies this.

President Chen has long wanted an investigation of the KMT's wealth, but until last Saturday's election the party's majority in parliament prevented him from doing so. Mr Chen's party, though now the biggest in the legislature, is still well short of a majority. But with the help of the like-minded Taiwan Solidarity Union and defectors from the KMT, as well as support from People First, Mr Chen may now have better luck. Public exposure of its avaricious past would be another nail in the KMT's coffin.

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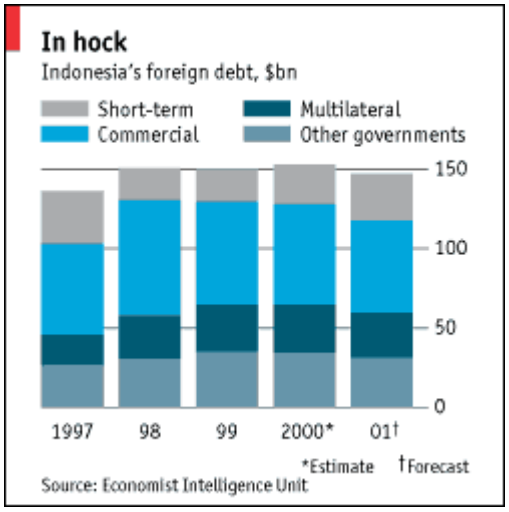
Indonesia's economy

In the dream time

Dec 6th 2001 | JAKARTA
From The Economist print edition

The government is running on empty



WHEN Indonesia's new president, Megawati Sukarnoputri, named her cabinet in August, her economic line-up was hailed as a "dream team". The IMF, which had quarrelled with the previous government, quickly resumed lending. In a period of just three weeks, the rupiah rallied against the dollar by more than 25%. Having witnessed the demise of three presidents in as many years, Indonesians and foreigners alike were seized by the notion that a stable and capable government would at last get to grips with the country's struggling economy.

Just three months on, that idea seems dream-like indeed. The public debt has risen above 110% of GDP. A privatisation programme that would help stabilise the government's finances has not brought in a penny this year, despite the dream team's promises to the IMF. With the global slowdown pinching exports, and fears of terrorism hitting tourism, the outlook for growth is gloomy. The rupiah has lost almost all its recent gains. Indonesia's creditors are sounding increasingly grim. Could the country be heading for an Argentine-style nightmare?

In the short term, Indonesia should cope. Compared with Argentina, it has borrowed more of its debt from international financial institutions and friendly foreign governments, which tend to be less skittish than private lenders. But they, too, are rattled. In early November, at a meeting of an association of creditors called the Consultative Group on Indonesia, a World Bank official declared that the government had only six months to prove it was serious about sorting out the economy—and its own finances. The group did pledge loans of over $3 billion for 2002, but tied over a third of that to specific reforms.

On paper, there is nothing to worry about. At the IMF's urging, the government approved a sober budget for 2002 that would cut the deficit to 2.5% of GDP from the current 3.7%. That narrower shortfall will be financed through privatisation, asset sales from the government's bank restructuring agency, and more borrowing.

But things are unlikely to go according to plan. For starters, the budget is based on optimistic projections for the oil price and economic growth. Inflation is running above target, limiting the scope for interest-rate cuts and so keeping the cost of servicing the government's debt high. More important, Indonesia will struggle to meet its privatisation target of $650m.

The problem is not so much with the amount, which represents less than 3% of projected spending, as with the entire concept. Academics, MPs, trade unions, journalists and just about everyone else denounce privatisation as theft of the national patrimony. A regional governor recently managed to block the planned sale of a cement company by threatening to seize its biggest factory in protest.

Since much lending is tied to progress on privatisation, failure to make any headway would have a double impact on the budget. But instead of promising to meet their target, government officials wring their hands, mutter about the difficulties and muse about the sort of debt relief that Indonesia's increasingly impatient creditors are unwilling to offer.

Yet even if the big lenders stick to their guns, and withhold some loans, they will not want to push Indonesia into default. The IMF does not want the country to go bust and add to its string of failed reform

programmes. Avoiding an economic crisis in the world's largest Muslim country seems all the more important just at present. The government, for its part, has muddled through financing shortfalls before, chiefly by cutting back on development spending. It could also resort to accounting tricks, such as withholding transfers to provincial governments, or delaying reimbursement to the state-owned petrol distributor for fuel subsidies. In other words, the likeliest outcome is a monumental fudge.

That might not sound so bad to Indonesian officials, but it will do the country's economy no good at all. With inflation already in double digits, and poised to increase because of a government pledge to raise fuel prices, the central bank is keeping interest rates high. Banks are in no mood to lend anyway, as they struggle to restore their balance sheets after the crisis of 1997. The government's financial straits put a fiscal stimulus out of the question. Foreign investment has evaporated—approvals in October were one-tenth the level of a year earlier. So privatisation, in addition to its budgetary virtues, is one of the few available means to inject new life into the economy. Time for foreign lenders to give the dream team a wake-up call?

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Japan

Oh, it's a girl

Dec 6th 2001 | TOKYO
From The Economist print edition

A royal baby starts a debate about women's prospects

Reuters

Birth of a boom?

AFTER eight years of marriage and a miscarriage, Japan's crown prince and princess can at last celebrate the birth of their first child. Yet even as the country awaited a naming ceremony on December 7th, debate began on the baby girl's succession rights. Had the child been a boy, the royal bundle would be second in line for the throne, behind his father, Prince Naruhito, who is 41. Polls suggest that most Japanese want to change the law barring females from the succession. This week several prominent politicians backed the idea. But conservatives, especially in the ruling Liberal Democratic Party, will resist change.

While the hard right fretted over the rules of succession, however, many Japanese focused on some of the bigger worries facing the country, such as the economic slump, a rapidly ageing population and the perennial travails of Japan's working women. Since little else has worked, their hope is that the royal birth will provide a catalyst for change.

Optimists like to think that a wave of post-partum euphoria will, for example, help boost consumer spending. In the long run, a baby boom would be even more popular. It would do wonders for the economy, by helping to replace a fast-growing generation of retiring workers. Japanese couples have recently been in no hurry to start families. The hope is that the royal birth will inspire the procrastinators. The country's fertility rate, the number of children a woman typically produces, is only 1.4.

The dearth of traditional workers will also make Japan increasingly dependent on its female workforce, which it badly under-exploits. If it is to fend off serious employment shortages, relative to the number of dependent pensioners, the country will have to boost women's career prospects while also encouraging them to have children earlier, and to have more of them. That would require more child care, shorter journeys to work, more flexible careers and a radically different role for men. These are changes that many Japanese have barely begun to contemplate.

A decision to let females take the throne would be an important symbolic victory for the country's women. And since Japan has had eight empresses in previous centuries (not to mention Amaterasu, the mythical sun goddess from whom the whole dynasty supposedly sprang), the idea is hardly novel. However, popular support for reform is not the same as consensus. And since the two male heirs next in line are fairly young, there may be no succession “crisis” for decades. It should be no surprise if nothing changes soon.

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Israel's war on terror

Sharon aims Israel's guns at Arafat

Dec 6th 2001 | JERUSALEM
From The Economist print edition

AP

After terrorist attacks, the Israeli army goes after the Palestinian Authority

Get article background

EARLY in the morning of December 3rd, Israel's cabinet pronounced Yasser Arafat's Palestinian Authority (PA) “a terror-supporting entity” that must be dealt with accordingly. This followed a particularly terrible series of terrorist attacks in Jerusalem and Haifa on December 1st and 2nd.

Israeli bulldozers then ploughed up the runway at the Palestinians' sole airport (see above). Israeli aircraft bombed offices and police stations in several West Bank cities, including a site next door to Mr Arafat's headquarters in Ramallah (where he was working at the time), while armoured units reimposed tight sieges. The PA claimed it was arresting Hamas and Islamic Jihad militants and that the Israeli attacks were hampering this effort. Its policemen were prevented, by angry crowds, from approaching Hamas's spiritual leader in Gaza. The Israelis dismissed the crackdown as window dressing.

The far-right ministers in Ariel Sharon's government who drafted the “terror-supporting” resolution believe that the week's events signal a sea-change. Now, they say, the army can forcibly dismantle the PA and deport Mr Arafat and his entire leadership back to Tunisia, from where they came a decade ago, at the start of the accursed Oslo process.

In his heart, Mr Sharon possibly shares these sentiments. In his head, though, he knows that the Americans will not allow it, at least not yet. Their peace envoy, a former marine commander, Anthony Zinni, has been told to stay in the region and keep at his thankless mission of trying to arrange a ceasefire between Israel and an authority on which Israel has ostensibly declared all-out war.

At the same time, the Americans have grown sick of Mr Arafat and his prevarications, and are telling him, and the world, as much. Israel bombed and shelled and invaded the Palestinian areas, and the Americans uttered not a word of complaint. “Obviously,” the White House spokesman observed, “Israel has the right to defend itself and the president understands that clearly.” The secretary of state, Colin Powell, pointed out that both sides needed to remember “that there will be a tomorrow and a day after tomorrow, and we have to try and get back to a process that will lead to a ceasefire.” But he, too, put the onus on Mr Arafat “to do a lot more than we have seen so far” to stop the terrorism.

The new twist in the 14-month spiral of violence began on Saturday night in a crowded Jerusalem pedestrian mall. Two Palestinian suicide-bombers blew themselves up in close proximity to each other. Ten Israeli teenage boys died in the blasts. Minutes later, a car-bomb went off nearby, injuring dozens more. The next day, in Haifa, a suicide-bomber sent himself and 15 fellow-passengers to their deaths.

Before that, on November 23rd, Israel had assassinated a celebrated Hamas fighter, Mahmoud Abu

Hanoud. The fundamentalist organisation vowed revenge, and its cells have taken responsibility for the attacks at the weekend. But few Israelis accept that the terrorism was the result of the assassination. A dark pall of grief and rage has descended on the country. “Not since the bus bombings of 1996”, wrote the normally staid *Haaretz* on December 3rd, “has there been such a shocking sequence of events.”

In 1996, when Shimon Peres was prime minister, Mr Arafat launched a sustained campaign of repression against Hamas and its smaller sister-group, Islamic Jihad. Hundreds of activists were imprisoned. Mr Arafat shrugged off criticism that he was a lackey doing Israel's bidding. The Palestinian national interest, he argued, required that the terror should stop. This time, too, Mr Arafat's aides assured Mr Peres, now foreign minister, in frantic telephone calls on December 2nd, the PA would act with determination to rein in the terrorists. They said that 120 men were already in jail, and asked for four days to prove that they were in earnest.

At the cabinet meeting that night, Mr Peres tried to make the case, but Mr Sharon was having none of it. That same morning he had sat with George Bush drawing a comparison between America's and Israel's war on terror. Snubbed and angry, Mr Peres led the half-dozen Labour Party ministers out of the cabinet room before the vote was taken. But of the 18 ministers left, all but two approved the new description of Mr Arafat and his authority as Israel's enemy. The only loophole, left in deference to the moderates, was a sentence saying that “This determination is subject to change if the PA fulfils its commitments, according to the agreements, to prevent and foil terrorism.”

The resolution, Mr Peres said bitterly next morning, meant Israel had decided “to destroy the Palestinian Authority”. Labour ought to leave the government, he added. But later in the day he told the Russian foreign minister, at a meeting in Bucharest, that the orders to the army were to strike at buildings and installations and avoid hitting people. The Palestinians reported three dead and several dozen injured in the December 4th raids. The army itself said the attacks on Mr Arafat's offices were intended as warnings to the Palestinian leaders rather than as attempts to eliminate them physically. Privately, Israeli officials confirmed that Mr Bush had warned Mr Sharon that Mr Arafat himself must remain unharmed.

By midweek it was clear that most of the Labour ministers did not see Mr Sharon's declaration of war on the PA as reason enough for them to lay down the burdens of office. Mr Peres, too, it seemed, would find a way to live with the new language. Whether it goes beyond language will depend on the Americans no less than on the fractious Israeli ministers. And in the Americans' book, the call is now seen as Mr Arafat's to make. He can still clamber back to acceptability if he curbs Hamas and the other groups. If he does not, or cannot, America too could brand him “terror-supporting”, and expendable.

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Iran's reformists

Thinking of new, and wilder, ways

Dec 6th 2001 | TEHRAN
From The Economist print edition

How to fight a conservative establishment that always wins

Get article background

AP

Khamenei points, Khatami listens

THE tendency of Iran's small conservative establishment to disregard the wishes of the reform-seeking majority seems to be rising in tune with President Muhammad Khatami's reluctance to resist it. The seven unknowns who were returned from the province of Golestan in by-elections held on November 30th bear no relation to the deputies who would have been elected, had the Council of Guardians, a conservative monitoring body, not prevented well over one-third of the field from standing. Mr Khatami, who seems helplessly aware that Iran's chances of peaceful reform are slipping away, has remained silent. His allies in parliament are weighing the risks of trying new ways to end their growing irrelevance.

Their frustration has rarely been more obvious, or humiliating. Once the Council of Guardians announced the mass disqualification, deputies gamely prepared three bills designed to curb its powers. To nobody's surprise, all three were vetoed by the same council, which also acts as an upper house. The most important of the bills went before another body, the Expediency Council, whose job is to mediate impartially in disputes between parliament and the Council of Guardians. Fat chance: the Expediency Council is dominated by conservatives and, by November 28th, it too had turned the bill down. A few days later conservative newspapers were smugly wishing the new deputies well. Small wonder that frustrated reformists are reviving talk of an old but potentially liberating solution: a referendum on the council's power to vet candidates.

It is just an idea, but the fact that it is being discussed shows that reformists are trying to shake off the torpor that seems to have afflicted the president. Proponents want a referendum to be part of a more aggressive approach to politics in general. They think, for instance, that deputies threatened with imprisonment—two were recently sentenced to jail terms, in apparent violation of their immunity—should in fact, as well as in theory, be able to take physical refuge in the parliament building. The president, they say, should renegotiate his subservient relationship with Ayatollah Ali Khamenei, who, as supreme leader, is the least assailable of the conservative arbiters. Ali Reza Alavi Tabar, one of the theorists in the reformist camp, would like a referendum to tackle other conservative-imposed policies, such as the refusal to talk directly to America.

All this probably carries too many risks to win it Mr Khatami's support. After all, the vetting sytem is regularly defended by the supreme leader himself. Ayatollah Muhammad-Reza Mahdavi Kani, a senior conservative, has accused the devious United States of supporting referendums abroad as a way of toppling regimes it does not like. Last year Ali Afshari, a student leader, was arrested for suggesting that Mr Khamenei's powers should be put to the vote; Mr Afshari was last seen on state television “confessing” to trying to overthrow the regime. According to conservatives, the Council of Guardians can veto a parliamentary decision to hold a referendum. Reformist deputies disagree.

Eighteen months after their victory in a parliamentary election offered an illusory promise of legislative change, Mr Khatami's supporters are searching for a fresh approach. Abbas Abdi, an influential reformist, has proposed a “collective withdrawal from government” if the situation does not improve. Deputies are

also considering their mass resignation from parliament. The Golestan elections offered a taste of reformist non-co-operation. A group of local reformists refused to field candidates, and made a point of not calling on the people to vote.

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Western Sahara

Polisario's sinking hopes

Dec 6th 2001
From The Economist print edition

Promises, promises, never kept

A BAD time, it seems, for the cause of self-determination. For tens of thousands of refugees who have been waiting a decade for the United Nations to hold a referendum on the independence of Moroccan-occupied Western Sahara, the right to choose their fate is disappearing.

On a North African tour this week, France's president, Jacques Chirac, delighted Morocco by naming Western Sahara "the southern provinces of Morocco". Most Saharawis expect nothing better of the French, Morocco's protector. It is more worrying for them that the United States, which used to act as a counterbalance, now appears to be jumping on board. Last month two oil companies, one French, one American, signed deals to prospect for oil in Western Saharan waters.

TotalFinaElf, based in Paris, gained a 115,000 square-kilometre (44,000 square-mile) area off the coast of Dakhla, the former colonial capital. Houston's Kerr McGee took a 110,000 square-kilometre area of water farther north. Both signed their deals with Morocco, ignoring the other official claimant, the Saharawi independence movement, the Polisario Front. Polisario vainly waved a 1991 UN resolution against "the exploitation and plundering of colonial and non-self-governing territories by foreign economic interests".

TotalFinaElf insists that it has no political position on Western Sahara: as yet, it is contracted to search, not drill, for oil. But as at sea, so on land. This month the company is again financing the Paris-to-Dakar car rally, whose course through Western Sahara under the supervision of the Moroccan army so angered the Polisario Front last time that it called it a declaration of war. But few took the threats seriously. Polisario could once muster 15,000 guerrillas, but the rally, in January, went ahead without a shot being fired.

Negotiations have fared no better. Polisario's president, Mohammed Abdelaziz, whose rule extends to four wretched camps in the Algerian desert, invited Morocco's King Mohammed for face-to-face talks. The monarch did not deign to reply. Mr Abdelaziz was welcome as a subject, mocked Morocco, to pay homage.

But the biggest nail in Polisario's coffin has been the UN, which promised so much and delivered so little. After ten years and half a billion dollars failing to organise a referendum, the UN's Security Council has now approved a plan that will convert Morocco's *de facto* rule to *de jure*.

Drawn up by the UN's envoy for Western Sahara, James Baker, a former American secretary of state and himself an oilman, the plan postpones the referendum for a further five years. During this time, the Saharawis would be allowed to elect an autonomous body, but with limited authority only. Even more depressing for the Saharawis, the referendum's voter list would be expanded from indigenous people to all residents, including the settlers and soldiers Morocco has poured into Western Sahara since taking the territory in 1975. These newcomers now almost certainly form the majority.

Polisario rejected the plan, but attended talks at Mr Baker's ranch in Wyoming. In the past, the independence movement could have counted on support from American oilmen and their hefty investments in Polisario's backer, Algeria. TotalFinaElf, too, has substantial operations in Algeria, and

wants to develop them further. But after 25 years of stalemate, Algeria too seems to be wavering.

The Algerian press reported that on his visit to Washington, Algeria's president, Abdelaziz Bouteflika, met Mr Baker and agreed to the autonomy plan. Mr Bouteflika denies this. But this week Mr Chirac, making the first trip by a French president to Algeria for over a decade, promised Europe's backing for Algeria's conflict with its Islamist rebels—price enough perhaps to cede Western Sahara to its rival, Morocco.

King's move

With such international approval, King Mohammed can do things that his father never did. The late King Hassan refrained from drilling for oil and only rarely set foot in the territory, for fear of rocking the status quo. Mohammed has few such qualms. To assert his authority, and accompanied by an entourage filling four Hercules transport aircraft, he has toured the territory twice in the past month. As an act of “affection for the sons of the Sahara”, he pardoned 56 prisoners, including Morocco's longest-serving political prisoner, Mohammed Daddach, jailed since 1978. Others have since been imprisoned.

But the king should beware of counting his chickens before they are hatched. Spain, Western Sahara's former ruler, is not backing France's stand, and has increased its support for Polisario. And King Mohammed might also remember the fate of the huge discovery of oil in eastern Morocco that he declared to be God's gift. The oil turned out to be mud.

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Zimbabwean law and order

Changing the rules

Dec 6th 2001 | HARARE
From The Economist print edition

Robert Mugabe prepares to win next year's presidential election

FIGHTING to stay in power, Robert Mugabe has turned his attention to the media. A new information bill, which will become law before the presidential election due by April, states that any journalist who "spreads rumours, falsehoods or causes alarm and despondency" will face fines or two years in prison. All journalists must be Zimbabwean citizens. They will be "regulated" by a government commission, and if they cause offence, they may be banned. Two weeks ago the state-run *Herald* described six journalists working for foreign publications as "terrorists". What does the president want to hide?

The state already holds a monopoly on domestic television and radio broadcasts, which reach into the farthest corners of the country, and slavishly support the government. The *Herald* is equally loyal: this week it published a scathing attack on South Africa's president, Thabo Mbeki, who, it said, had betrayed Zimbabwe, and was "complicit in the [British] plot to overthrow the government". The few independent newspapers that dare to report political violence, or the activities of the country's opposition, the Movement for Democratic Change, have suffered arrests and the destruction of their equipment.

Even more threatening, the cabinet has just approved new public-order and safety laws, which are harsher than those introduced by the white-minority regime in the 1960s, granting the government the sort of powers that would be expected under a state of emergency. "Any subversion of constitutional government" will be an offence, explained Patrick Chinamasa, the justice minister, last month. Those accused of treason or terrorism would have little recourse to the courts.

This week the government was encouraged in its efforts to change the law by a ruling from the reconstituted Supreme Court that its land-reform programme was fine. A year ago the court had ruled that the invasions of farms by "war veterans" did not constitute a workable form of land reform. But it now describes land grabs as a "matter of social justice and not strictly speaking a legal issue". It even suggests that the rule of law prevails on the invaded farms. By creating a compliant Supreme Court, Mr Mugabe has side-stepped pressure to comply with a Commonwealth agreement struck in Abuja, Nigeria's capital, three months ago, under which Britain agreed to finance orderly land reform, in exchange for an end to farm grabs.

The opposition accuses Mr Mugabe of manipulating the law to prevent the registration of voters who are likely to support his rival, the MDC's leader, Morgan Tsvangirai. This week another court ruled that the government's demand that potential voters must produce several forms of identification was unfair, and may have discouraged many during the three weeks of voter registration that ends on December 9th. This decision may have allowed some additional registration, but it is clear that thousands, even hundreds of thousands, of voters have been disfranchised by new citizenship requirements, the displacement of farm labourers and the government's refusal to accept postal votes.

Next week the ruling ZANU-PF party holds its congress and will select Mr Mugabe officially as its presidential candidate. Is there any hope of anybody else being allowed to win? Mr Mbeki's new frustration could signal that other African leaders are about to respond to Mr Mugabe's misrule. But their pressure may be ignored. Delegations from the European Union, the United Nations and other international bodies are frequently brushed off by the president, who insists that outside interference infringes his country's sovereignty. He angrily rejected the EU's request to send a full team of observers, even as he demanded, through the UN, $80m in food aid.

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Central African Republic

Mayhem amid the mango trees

Dec 6th 2001 | BANGUI
From The Economist print edition

The French pull out, as the Libyans move in

AS THEY huddle in the Air France office, hoping for a ticket home, French expatriates cannot believe how quickly the Central African Republic has gone bad for them. In hushed tones, they swap tales of woe. Some tell of rifles poked in their faces at roadblocks. Others have been shot at when it looked as if they might be about to break the curfew.

With its riverside villas and mango-strewn boulevards, Bangui, the capital, was once a popular posting. Those were the days when France thought nothing of sending in paratroopers to prop up, or topple, an African government. But the 1,200 French troops were pulled out of the Central African Republic in 1998. Nowadays, it is Libyan soldiers who keep the “peace”.

In May this year, Muammar Qaddafi, who nurtures a vision of himself as president of a united Africa, sent troops and tanks to help President Ange-Félix Patassé put down an attempted coup. His soldiers stayed on, and Libyan tanks guard a number of places in Bangui. Their help came in useful at the end of November when fighting flared after the army commander-in-chief was sacked: Libyan aircraft bombed rebel-held districts of the capital.

Opposition parties call the Libyans the “new colonialists”. They are not the only ones who want their withdrawal. But without Libyan support, the now reclusive president would be in considerable danger. His guards cruise around in red pick-up trucks stolen from the French government, with the markings crudely blacked out. Shiny Libyan weaponry, such as rocket-launchers, are often strapped on.

In an interview this summer, Mr Patassé, angrily pointing to his garden gate still riddled by the bullets of rebels who had entered his house, accused “colonial” France of arming the May coup plotters. As evidence, he cited boxes of French weapons, addressed to the country's paramilitary police force, which were discovered at a house belonging to the coup leader, a former president, André Kolingba. France says the weapons had been mysteriously diverted, and denies any involvement in the attempted coup.

Mr Patassé dislikes France, and does not bother to hide it. He has publicly insulted the French ambassador and, after the attempted coup, prevented him from leaving his embassy for a couple of weeks. The president's animosity does not, however, prevent him from accepting French aid, worth FFr150m ($21m) a year, plus more through the European Union.

France still has other levers. For example, under the terms of an accord signed at independence, it controls the Central African Republic's “strategic resources”, including its uranium. Mr Patassé's government is keen to renegotiate the accord.

Many of the country's own citizens, as well as the French, are quitting. Fearing reprisals after May, some 30,000 members of Mr Kolingba's Yakoma tribe fled across the Obangui river into Congo. Since the Yakoma form the bulk of the Central African Republic's middle class, the country can ill afford to lose them. Now Yakoma technicians, magistrates and teachers have almost taken over the Congolese town of Zongo, over the river, where they sit in tents in well-pressed suits, doing business on mobile phones, and perhaps plotting another coup.

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Biological weapons

A viral bust-up

Dec 6th 2001
From The Economist print edition

Struggling to uphold the ban

WHY would the country that was first to forswear biological weapons more than 30 years ago, and has itself now been a victim of their use, want to abandon multilateral efforts to monitor the biological ban? Despite the anthrax attacks in America and recent reports that Osama bin Laden's terrorists had been working on nuclear, chemical and biological weapons, John Bolton, America's chief arms-control diplomat, insisted bluntly last month that a seven-year effort to bolt a new inspection protocol on to the 1972 Biological Weapons Convention (BWC) was “dead”. The convention's five-yearly review ends in Geneva this week. What can be salvaged from the wreck?

America does not dispute the need to strengthen the convention's ban on the development, production and stockpiling of bacteriological weapons (their use has been outlawed since 1925). Among those dabbling in the biological black arts, claims America, are Iraq, North Korea, Iran, Libya, Syria and Sudan. Science has also increased the sense of urgency: genetic modification, misused, can make viruses much more potent weapons. An ability one day to direct them at a particular ethnic group would remove a big deterrent to their use—their unpredictability.

Graham Pearson, of the University of Bradford, argues that biological weapons pose the greatest danger: “They have the weakest prohibition regime, yet are the easiest to acquire and can have effects comparable to nuclear weapons.” America is the only country inside the BWC to reject the proposed monitoring protocol outright. Are the other 143 all wrong?

Privately, a number of other governments have been unhappy with it too. Biological agents pose special monitoring difficulties: the amounts needed to spread harm are tiny, and hard to track. After the Gulf war, UN inspectors had much tougher powers than were being proposed for BWC monitors and yet were still unable to unearth all Iraq's biological secrets.

The Bush administration is also worried that inspections might allow outsiders to divine what agents its biological-defence programme was trying to defend against. Biotechnology companies in several countries feared that inspections would compromise valuable commercial information. A recent report by Amy Smithson of the Stimson Centre argues that such worries are overdone; that attempts to accommodate them have left the inspection rules for industry too weak to clear the good guys, let alone pick out the cheats; but that such flaws are fixable.

America has proposed “voluntary” co-operation in place of an agreed inspection regime to clear up compliance concerns, though others are mystified how this would work. Its other proposals—that governments should pass their own laws to ensure that their citizens observe the ban and tighten procedures for handling dangerous biological agents—are unobjectionable, though likely to be applied unevenly. It has called for better reporting of outbreaks of disease and investigation by the UN of possible weapons use. All these suggestions have been tried before.

Other countries have their own ideas. The trick in Geneva is to sift out what good intentions can be applied now, while keeping minds open—including America's—to a future inspection regime that meets all reasonable requirements.

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Freedom of the Press award

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For two years *The Economist* has sponsored the Association of Circulation Executives' Freedom of the Press award. This year the award goes deservedly to Geoffrey Nyarota, editor of Zimbabwe's *Daily News*.

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About sponsorship

A constitution for Europe

The latest battle for the continent's new shape

Dec 6th 2001 | BRUSSELS
From The Economist print edition

At a summit in Belgium next weekend, European leaders will start framing a constitution for the European Union. It will be fiercely argued over

Get article background

"ALL references to founding fathers and 1787 should be banned," grumbles a British politician closely involved in the "future of Europe" debate. Too late. Germany and France have already agreed that the haggle that will get under way in the Brussels suburb of Laeken on December 14th should culminate by 2004 in a "European constitution". Efforts to narrow the discussion down to technical and institutional matters are bound to give way to much grander themes. The EU's future is indeed at stake.

Given the range of opinions within the EU, no one can foretell the final version. But the ambitions of those keenest to bring European countries ever more tightly together are apparent in a "draft declaration" circulated by Guy Verhofstadt, Belgium's prime minister and the summit's host. His letter poses a series of questions. But a disgruntled Scandinavian diplomat says it is "clearly written by someone with a blueprint for a full-fledged federal state in mind". It floats ideas for creating a "European political area", such as directly electing the European Commission's president and giving more powers to the European Parliament and to the commission.

Mr Verhofstadt's draft is sure to be revised at Laeken and will in any event be only the first shot in a long campaign. But it shows how widely the future-of-Europe debate will range. When Europe's leaders first agreed to the idea of a constitutional convention, just four issues were mooted: the division of powers between the EU and its countries and regions; the relationship between national parliaments and the EU; the legal status of the EU's recently drafted charter of rights; and the simplification of Europe's many overlapping treaties. Restricting the debate to just four topics was seen as the work of people hostile to tighter integration, in particular Britons and Scandinavians. But, as a senior EU official points out, "Those questions are open to very broad interpretation—and anyway, once the convention gets going in March, it will basically talk about what it likes."

Still, the big issues at stake have already become plain. The Germans were first to ask for a clearer division of powers to be laid down in a **charter of competences**, partly because the governments of their 16 *Länder* (states) feared that Brussels was eroding their powers (to bail out local industry, for instance). So Germany's ruling Social Democrats suggested that Brussels should gain some powers while Europe's nation-states should retain or win back others. The Germans want the EU to play a bigger part in foreign policy, defence and policing. But the Social Democrats' paper also floated the idea of "renationalising" agricultural and regional aid, which accounts for 80% of the EU's budget—for which Germany pays a disproportionate amount. Not surprisingly, the main beneficiaries of EU money, including Spain and France, strongly oppose such a change. The British keenly endorse the idea that powers can be repatriated from the Union.

The **role of national parliaments** is another big topic for debate. Britain's Tony Blair has proposed a second chamber for the European Parliament that would consist of national MPs to strengthen links between national democracies and European institutions. This idea, however, has gained little favour elsewhere. Officials at the European Commission say that it would just confuse an already complex European administration and that national views are already reflected in the Council of Ministers, which brings together ministers from the 15 national governments. Mr Verhofstadt and the German government have suggested that the council itself should become a "second chamber", implying that its legislative discussions should be held in public.

A **charter of rights** has already been drafted, but at the EU's summit a year ago in Nice, Britain stopped it having legal force. The British dislike the charter for going beyond the European Convention on Human Rights, which already has legal force in all EU countries, by adding new “social” rights. Expect the British, now in a minority of one, eventually to give way.

Simplifying the treaties is another item on the menu. European law has been made by a series of treaties signed by each of the countries in the EU. Minimalists say there should be a single, consolidated text. Maximalists want a whole new European constitution to be written.

Several other issues, beyond the original big four, will also be discussed:

Majority voting. Many people argue that a bigger EU will be unable to function if countries can keep their veto in a wide range of issues (see Charlemagne). Romano Prodi, the commission's president, thinks any new constitutional arrangements that fail to endorse a big increase in majority voting will be inadequate.

A European president. Mr Verhofstadt wants the commisssion's president to be directly elected, to strengthen its democratic legitimacy—and its power. Germany and the Benelux countries probably agree. France and Britain are against. Mr Prodi, who wants more integration in most areas, thinks the proposal premature. Others think the commission's president should be elected by the European Parliament.

Foreign policy and judicial affairs. At present, it is mainly governments that run the EU's fledgling foreign policy; the commission has little say. Integrationists want to end this distinction and make the EU's high representative for foreign policy (at present, Javier Solana) the commission's vice-president. And foreign-policy decisions, they say, should be taken by majority vote. Germany would probably favour this idea; Britain and France would oppose it. But the British agree with the Germans that the commission should have more of a say in Europe-wide justice and home affairs, including asylum and immigration.

Direct taxation. Integrationists want to move away from the present system under which individual countries pay for most of the EU's budget. They argue that a direct EU tax, probably a share of sales taxes, would make the Union's finances more open; *sotto voce*, they note that in the long run that might increase its revenues.

In any event, the convention will not produce a single blueprint for the 15 governments to “take or leave” but a batch of “options”. Moreover, a “firebreak” of a few months will allow time for reflection between the end of the convention and a summit conference where governments will be expected to nail down a final EU constitution.

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Europe's constitutional convention

Who will run it—and how and when?

Dec 6th 2001 | BRUSSELS
From The Economist print edition

A contest has begun over how and by whom the convention should be run

Get article background

AP

President Giscard, again?

AS WELL as setting the agenda, the EU's summiteers must decide on procedure for the constitutional convention—and on who will preside over it. It will start in March. The integrationists want it to finish about a year later and all governments to have signed a new constitutional treaty by the end of 2003. This timetable would have the advantage, from their point of view, of wrapping up the new constitution's final draft while the EU presidency is held by Italy, which by tradition favours integration. It would also prevent negotiations spilling over into the ensuing Irish presidency, which might be bad in the eyes of integrationists, who now suspect the Irish of Euroscepticism. And it would mean that the 15 countries already in the EU would stitch up a deal before newcomers arrive. But an actual timetable is unlikely to be agreed on at Laeken.

The convention's shape is clearer. Just one representative from the European Commission will attend. Another 100-odd delegates will represent national governments and parliaments, the European Parliament and countries trying to join the EU. Turkey, though it has not even begun negotiations to join, is likely to have a voice. A five-strong presidium will oversee the convention's work.

Finding the right person for the job of chairing the show may prompt a hearty row at Laeken. The front-runner, despite his 75 years, is Valéry Giscard d'Estaing, a former French president. The Germans, it is muttered, have accepted France's request for a French chairman. This might rattle the British and make others edgy too, since the commission's representative in the presidium will be Michel Barnier, another Frenchman, giving France two out of the convention's five-strong steering committee.

Martti Ahtisaari, a former Finnish president, is also in the running. In his favour is the possibility that the not-so-wildly enthusiastic might think him, as a Nordic, to be less zealous for integration. But his chances may shrink because—bizarre as this may seem—it may be decided at Laeken that the European Food Agency should be housed in Finland. The Finns, a commission man explains, “mustn't have too many presents”.

Another runner is Giuliano Amato, a former Italian prime minister and keen federalist. But his candidacy may be blocked on the ground that the commission's president, Romano Prodi, is also Italian. Too many presents for Italians.

A dark horse? Maybe Wim Kok, the Dutch prime minister, whom the British would probably back. But he might find it hard to stand down as prime minister until next summer—after the convention is meant to have started.

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Italy's government

Bickering and stalling

Dec 6th 2001 | ROME
From The Economist print edition

Too many ministers have embarrassed the prime minister

THINGS have not been going brilliantly for Silvio Berlusconi, Italy's prime minister. This week it was the turn of his deputy minister for home affairs to embarrass him. A ruggedly pugnacious lawyer, Carlo Taormina has stirred controversy ever since Mr Berlusconi appointed him after the right's general-election victory in May. In July he accused the magistrates who had ruled that a terrorist bombing in 1969 was the work of the far right of “rewriting Italy's history with a red pen” (ie, of being pro-Communist). Then, in his capacity as a lawyer, he defended a mobster in court against a state prosecution. And last month he accused Milan's anti-corruption magistrates of breaking the law; they should, he declared, be sent to prison.

Not just the centre-left opposition but members of the government's own centre-right coalition were appalled. Gianfranco Fini, leader of the post-fascist National Alliance, who is also deputy prime minister in the coalition, hinted that Mr Taormina should go. So did Pierferdinando Casini, the speaker of parliament's lower house. And so did Umberto Bossi, the leader of the once-separatist Northern League, another ally in Mr Berlusconi's coalition. Mr Taormina at first furiously refused to bow out. This week he resigned, but as a sop was given the chair of parliament's transport committee. The opposition was annoyed that parliament's speakers, both Berlusconi men, refused to hold a debate on Mr Taormina: it might have shown up the first cracks in Mr Berlusconi's coalition.

In any event, the episode reinforced the impression that, after six months, the government is stalling. Too many ministers have been drawn into time-consuming rows about the judiciary—and not just those involving the controversial tycoon-turned-prime-minister himself. The day Mr Taormina resigned, the justice minister, Roberto Castelli, again castigated “magistrates who play politics”. The entire board of the magistrates' union resigned.

Rows about conflicts of private and public interest still hog the headlines—and go beyond Mr Berlusconi's affairs. Franco Frattini, the civil-service minister, has been given stick for continuing to earn a lot of extra money by chairing an arbitration committee. Pietro Lunardi, the minister for public works, has been likewise chastised for failing to divest himself of the ownership of an engineering company that continues to benefit from fat public contracts.

Other prominent ministers have been entangled in other sorts of controversy. The foreign minister, Renato Ruggiero, and the defence minister, Antonio Martino, have been at odds. Giulio Tremonti has been beavering away at finance, but without so far managing to cut taxes as promised. He and Roberto Maroni, the labour minister, are keen to loosen Italy's sticky labour market. And Letizia Moratti, the education minister, wants to shake up the school system. But as soon as the trade unions protested against their plans, Mr Berlusconi got them to back down.

In sum, when he has not been troubled by his own problems, Mr Berlusconi has been surprisingly timid—much in the mode of cautious Christian Democratic prime ministers of old. But their coalitions were often shaky; Mr Berlusconi's has a handsome majority in parliament. And the public is either uninterested or on his side. What is holding him back?

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Germany's Christian Democrats

Back in the reckoning

Dec 6th 2001 | DRESDEN
From The Economist print edition

As the economy dips, the opposition Christian Democrats fight back

EPA

Merkel thinks she's back with a chance

FOR the past two years, Germany's opposition Christian Democrats, beset by scandal, strife and weak leadership, have been virtually written off. Gerhard Schröder's Social Democrats have reigned supreme. But the rapidly slipping economy and the glimmerings of a new sense of unity and purpose among the Christian Democrats after their national congress this week in Dresden may lift them out of the doldrums. Many of them think they now have a chance of winning next autumn's election. At any rate, the idea is no longer absurd.

Much depends on the economy. Hans Eichel, the finance minister, admitted this week that, after shrinking by 0.1% in this year's third quarter, it may contract by a “similar” amount in the fourth, putting Europe's biggest economy officially in recession. Mr Eichel still hopes that next year's output may rise by 1.25%, but concedes that the figure may be no better than this year's dismal 0.75%.

Some prominent economists say the economy is in its worst state for two decades. When he took office, Mr Schröder promised to reduce unemployment “massively”, but nearly 4m Germans are now out of work, almost as many as when he was elected—and the figure is set to go up. Social-security contributions, which he pledged to bring to below 40% of average wages, are rising too. Even taxes, which he promised to slash, are creeping back up.

Meanwhile, the Christian Democrats have—at least for the moment—rallied behind their till-recently-beleaguered leader, Angela Merkel. Just a few weeks ago, there had been whispers of a possible putsch against the boss they had elected only 20 months before. But with a rousing speech in Dresden Mrs Merkel seems to have regained her authority and won back her credentials as the main opposition candidate for the chancellorship.

But she still has a possible rival in the shape of Edmund Stoiber, the leader of the Christian Democrats' Bavarian sister party, the Christian Social Union, who wowed the delegates the next day. Pollsters say he would still have a much better chance than Mrs Merkel of beating Mr Schröder. But she remains very much in the running. Neither party on the right has a formal procedure for deciding who should lead it into battle. The pair have promised to thrash the issue out between them “early next year”. Their supporters are now likely to rally behind the winner.

Whoever is chosen will have a tough task. Mr Schröder is still enjoying the highest personal ratings for any chancellor after three years in office. But the gap between the parties is much slimmer. Some pollsters reckon that in Germans' voting preferences only a couple of points separate the two main parties of left and right. Mr Schröder has not won yet.

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Language in Catalonia

It isn't magic

Dec 6th 2001 | BARCELONA
From The Economist print edition

The region's boss wants Harry Potter dubbed into Catalan. Catalans don't care

SHOULD Harry Potter speak in Catalan? Yes, demanded Jordi Pujol, Catalonia's premier, or the film ought not to be shown there. Warner Sogefilms, its Spanish distributor, refused to dub it as Mr Pujol wished, even though he had offered to foot the bill. After a tussle, Warner agreed to issue a few copies with Catalan subtitles, and said it would dub future Potter movies in that language.

Mr Pujol has tried before: in 1999 he drafted a bill to make the studios dub their most popular films into Catalan, at Pta4.5m ($29,000) a go, with fines and cinema closures if they refused. Wary of a precedent that could be used against them in Eastern Europe, they challenged him in the courts, and he backed down.

Dubbed films have long been the norm in all of Spain. “Franco instigated the practice in the 1940s, as a way of censoring foreign films, and it continues to this day,” says Lluis Bonet, a film critic for Barcelona's *La Vanguardia*. During the dictatorship, any language but Castilian, the official variety of Spanish, was driven underground. Under democracy, new laws in Catalonia put an end to all that. Education and local government are conducted in both languages. By now, nearly everyone in the region can at least get by in Catalan, including the large minority not of Catalan origin.

And that, most people in Catalonia would seem to think, is enough. When the film opened there last weekend, audiences cocked a snook at Mr Pujol and the feebly resistant Warner alike. Seven cinemas showing it in English with Catalan subtitles took Pta3.25m between them in the first three days; one using Castilian subtitles took Pta2.54m; but 76 showing Master Potter dubbed into Castilian gobbled up Pta183.55m.

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Charlemagne

Don't call me greedy

Dec 6th 2001
From The Economist print edition

Must national vetoes go if the European Union is to function?

THE other day Charlemagne—the columnist, not the medieval emperor—committed an ugly *faux pas* in Spain. It was at one of those seminars on the future of the European Union, where diplomats and pundits while away long winter afternoons. Conversation turned to whether Spain could be expected to sacrifice most of the financial aid it receives from the other members of the EU, when much poorer countries in Central Europe join the club. The Spanish attitude, in essence, is, “Don't even think about it.” Spain will cling to the billions of euros it gets from the EU for as long as possible. Did the assorted Spanish academics and officials in the room realise, Charlemagne wondered aloud, that the rest of the EU viewed their attitude as “rather greedy”? Apparently not. The use of a word like “greedy”, huffed one participant, was a political slogan that was “inappropriate” at an academic conference; it showed a total failure to understand the principles of EU solidarity, fretted another. Perhaps, asked an economics professor icily, this was an example of the famous British sense of humour that she had failed to understand?

To be fair to the Spaniards, there is a more coherent response to the charge of greed than sheer anger. They say that, though their economy has progressed rapidly since they joined the EU in 1986, they are still poorer than the current average. Letting in a bunch of even poorer members will reduce the members' average wealth, thus, under present rules, making most Spanish regions ineligible for more aid. The Greeks, Portuguese, Irish and southern Italians, all of them big recipients of EU structural funds, would feel the same chilly effect. But, argue the Spaniards, a poor region like Extremadura will still be just as poor once the Union expands: how unfair to ask such regions in countries already in the EU to take the biggest financial hit when the club has new members. The answer, say the Spanish, is to make the EU budget bigger. Then Spain can go on receiving the aid it so richly deserves, even as new recipients join up.

It is an argument—but not much of one. Look at the gleaming new motorways and high-speed trains built across Spain with EU money and compare them with the wretched roads of Poland, and it is not hard to decide which is more deserving. The figures tell the same story. Spain's GDP per person is now over 80% of the EU average; Poland's is 35%, Latvia's 27%. Moreover, nobody is arguing for an overnight end to regional aid to Spain. Even under current rules, three of the 11 Spanish regions that now qualify would still get it after the EU expands.

Between the gleaming motorways of Spain and the wretched roads of Poland, it is not hard to decide which country is more deserving

A better defence of the Spanish attitude is that it is just one example of a problem that plagues the whole of the EU. European leaders love to talk about solidarity and the pan-European interest. But increasingly the EU is burdened with nonsensical policies because one country or another has taken it hostage, while cloaking national self-interest in hypocritical talk of solidarity. Thus at last month's world trade talks in Doha the Europeans found themselves defending grossly protectionist farm policies, mainly because France has a lot of farmers who do very well out of the EU's common agricultural policy. When the French defend the CAP they talk of the “European social model”, the beauty of the countryside and, naturally, European solidarity. Other Europeans see a naked attempt to hang on to a system that benefits France disproportionately.

The British and the Germans play the nationalist game too. The British regularly block moves towards greater integration favoured by a clear majority of the others; now they are defending the absurd position that Britain has a right both to stay out of the euro-currency zone and to block those who are in it from taking policy decisions as a group. The Germans, for their part, have managed to stymie the pan-European takeover code favoured by most other countries, because influential German companies do not want to be taken over.

Perhaps the most dangerous example of the nationalist use of the veto is Greece's attitude to Cyprus and the EU's enlargement. This week the leaders of the divided island's two parts, meeting for the first time in four years, raised a little hope that a settlement might at last be hammered out, which would enable the EU to embrace a united Cyprus. But if the talks (due to resume next month) fail, as well they may, the Greeks say that they would then veto the whole of enlargement unless the EU lets in the island's Greek bit. The rest of the EU is reluctant, since such a decision might provoke a confrontation, possibly even a military one, with Turkey, a strategic ally. So, because Greece is using the EU as a weapon in its struggle with Turkey, the club's governments may face an agonising choice: either they put off indefinitely the historic readmission of Central European countries to the heart of the continent; or they let in a divided Cyprus and risk an unnecessary row with Turkey.

Hang together? Or hang loose?

For convinced European federalists all these dilemmas prove that “inter-governmental” co-operation—that is, governments making deals through discussion and compromise between themselves—cannot work, especially in a club that doubles in size. But inter-governmentalism's virtue is that, because governments can veto decisions in any area where they are especially sensitive, no EU country has to swallow something that it simply finds horrible. Defenders of inter-governmentalism think that retaining the veto is the only way to make the EU function. The federalists, on the other hand, argue that in a vastly bigger EU the inter-governmental method is a recipe either for paralysis or for letting individual governments blackmail the rest, whether over regional funds, the CAP or Cyprus.

The answer, say the federalists, is clear. At next week's EU summit in Belgium, they will once again demand that many more decisions be made by majority vote. That, they say, would be the Union's making. Or, say the sceptics, its breaking.

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Religious schools

Tony and the little children

Dec 6th 2001
From The Economist print edition

The evidence doesn't support the government's faith in religious schools

Get article background

FOR a government pledged to improve an underperforming education system, church schools looked like the answer. The "strong ethos" of these schools, praised by numerous ministers, seemed to lead ineluctably to smart uniforms, good discipline and above-average exam results. More church schools would, presumably, mean better education; so the government set about increasing the number of "faith-based" schools, as they are called in these multicultural times.

Others, however, do not share the government's simple faith. On December 4th, the new education bill had its second reading in parliament. The worthy clauses about devolving more power to headteachers passed without comment, but the single paragraph on setting up more church schools aroused much dissent, most of it from the government's own back-benchers. There were always doubters, but opposition to state promotion of religion has sharpened since Muslim youths rioted on the streets of northern British towns this summer—and since September 11th.

Some 7,000 of England's 25,000 schools are "faith-based". The Church of England, which runs most of them, wants more; but the groups keenest on expanding faith-based schools are Sikhs, Hindus, Muslims and Jews. Since 1997, 11 schools run by minority faiths and funded by the state have started up, and they want to move towards parity with the Christians.

The government sees religious schools as a way of getting the middle classes, who turned to the private sector after selective state schools were abolished in the 1970s, back into state education. Church schools, with their apparently high academic and moral standards, look like the best way to lure them back.

Certainly, the middle classes are queuing up to get into church schools. But parents are interested in the sort of person their children are mixing with, as well as how good the teaching is. And the evidence suggests that the success of church schools is more to do with selection procedures than with the quality of teaching.

Unlike other state schools, which have to accept all children within their catchment area, church schools are allowed to select pupils on grounds of religious upbringing. Whether or not they are consciously choosing middle-class pupils, they end up with fewer poor children—as measured by the number of children eligible for free school meals—than other state schools do (see chart). Poor children tend to do worse than better-off ones in exams, so schools with fewer poor children are likely to perform correspondingly better. Indeed, a recent study carried out in Wales concluded that once the different levels of free-school-meal entitlement had been taken into account, the differences in performance between church and other schools "were not statistically significant".

Where the poor learn

Pupils eligible for free school meals in maintained schools*, %

Religious character	Primary schools	Secondary schools
Church of England	12.2	11.8
Roman Catholic	17.2	16.5
Other religious schools	10.2	7.1
Non-religious schools	20.2	16.8

Source: Hansard *January 2000

Perhaps even more damaging was a study on education standards for Civitas, a think-tank, by John Marks, an adviser on education to the Church of England. Mr Marks concluded that “overall standards are poor, with the extent of under-achievement increasing substantially for older pupils, and this is just as much the case for [church] schools as it is for local education authority schools”.

Religion's power to divide society and provoke conflict is sharper in people's minds now than it was when the government first dreamt up this scheme. If “faith-based” schools are not all they are cracked up to be, promoting them becomes harder than ever to defend.

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Educational standards compared

Britain scores

Dec 6th 2001
From The Economist print edition

Britain has done surprisingly well in a survey of educational standards

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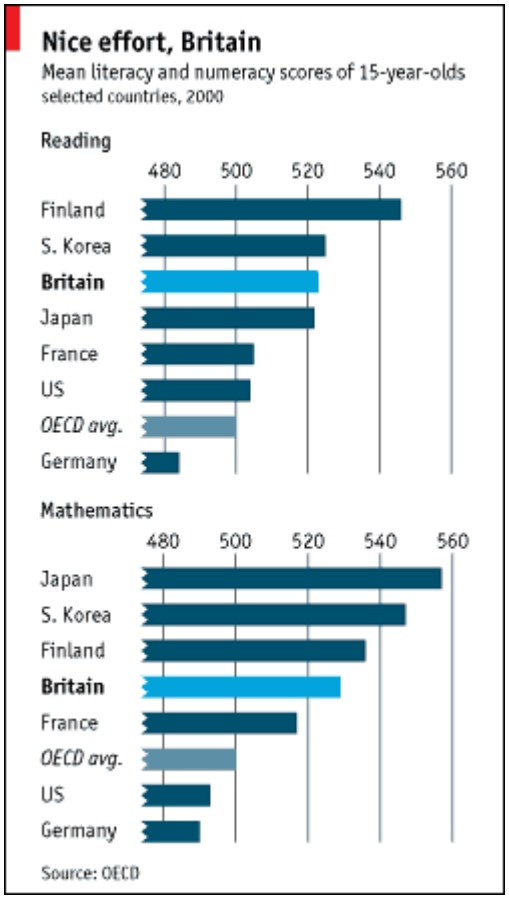

JUST as FIFA arranges world football tournaments, so the Organisation for Economic Co-operation and Development (OECD) organises world socio-economic tournaments. This week, it came up with the World Cup of education. Britain has done surprisingly well.

The survey was carrried out in 2000, and 265,000 15-year-olds from 32 countries were interviewed and tested on their abilities in reading, mathematics and science. In all three categories, Britain was well above average. In reading, Britain came fifth, in mathematics eighth and in science fourth. Britain did particularly well compared with other European countries. Apart from Finland, which won the overall tournament, beating South Korea, only Ireland was ahead of Britain in reading, and Switzerland in mathematics. Germany was the big loser, relegated to the third division in all three categories.

The survey gives ammunition to those who think that after a decade of controversial educational reforms, Britain is finally heading in the right direction. Estelle Morris, the secretary of state for education, described the results as “a vindication of the reforms of the last few years”. The Conservatives also thought that they could claim some credit, pointing out that a 15-year-old will have spent most of his educational career benefiting from their policies before 1997. On the other hand, the results may say more about the inconsistency of international comparisons than about particular policies. In June 2000, another OECD report ranked Britain 14th out of 20 in a survey of adult reading and literacy standards. Sweden came top.

There is bad news as well as good in this new survey for Britain. It has one of the widest gaps in attainment in reading between pupils from the wealthiest and poorest quartiles. South Korea and Finland, by contrast, have the smallest differences. Britain needs to work harder to bring its poorer players up to standard.

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Contemporary art

No sharks, please, we're British

Dec 6th 2001
From The Economist print edition

London is the centre of contemporary art, but Britons won't buy the stuff

Tate Photography

A dim view of contemporary art

WHEN Madonna presents the 2001 Turner Prize to one of four British artists on December 9th, the show at the new Tate Britain will have attracted almost 100,000 visitors. Some 6.2m have queued at the doors of Tate Modern since it opened last year. Charles Saatchi, the godfather of the Young British Artists movement, has just unveiled his plans to open a huge new exhibition space for his collection at County Hall, westwards along the south bank of the Thames. London's thriving art scene, which started as a student-organised warehouse exhibition in 1988, has turned into a big business. Art dealers, collectors and curators have snapped up the work while the Tate has used events like the Turner Prize to create a media circus in the name of “educational enlightenment''.

But while London has been the hottest place in the contemporary art world for a decade, most rich Britons prefer to remain spectators rather than buyers. Contemporary British artists make their money from the many American collectors happy to fork out £26,000 ($37,000) for, say, one of an edition of three heart-shaped neon works by Tracey Emin that spells out Kiss My Soul.

A few serious new collectors—such as Peter Simon, founder of Monsoon, a chain of clothes shops—have emerged in the last five years, but their avant-garde taste stands out in a nation of nostalgics. Simon Lee, a dealer, reckons that there is only one British contemporary art collector for every 1,000 Americans. Indeed, Sotheby's two-part contemporary art sale in New York last month—which realised $44.8m—boasted only one British buyer. White Cube, a fashionable London gallery whose stable of artists includes Damien Hirst and Ms Emin, reports that a hefty chunk of its British sales are to wealthy foreigners living in this country.

“Most people with money in Britain still like to go back to the 18th or 19th century every weekend,” says Leslie Waddington, a contemporary art dealer who has claimed that 95% of his clients are foreign, and of the British 5%, 99% are Jewish. Rather than buying work that concerns itself with the shock of the new, most British multi-millionaires prefer the comfort of the classics. Andrew Lloyd Webber and Paul McCartney, for example, favour Pre-Raphaelites.

David Hockney, Britain's best-known contemporary artist, puts it down to what he describes as the British lack of visual sense. British taste has rarely been ahead of the curve. Few rich industrialists of the early 20th century showed an interest in revolutionary artistic movements like post-impressionism and cubism, preferring instead to follow the conservative Royal Academy. Tate Modern's collection has suffered as a result.

Alternatively, perhaps this hostility to the new is something to do with class. Maybe the British preference for old houses and old pictures is something to do with the reverence for inherited wealth. Or maybe British collectors are just cautious businessmen. Contemporary art is a risky investment. Many of the artists most sought-after in the 1980s have not stood the test of time. And, similarly, many of those who are now lionised will disappear without trace, and any investment in their works will evaporate with their fame.

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Garages

Sand in the engine

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The government's campaign to make garages honest is going nowhere

EVERYBODY who has ever had a car has also felt ripped off by the men who maintain it. So a year ago, sure of support and confident of success, the government announced that it would get tough with the £10-billion-a-year car servicing and repair market. The Department of Trade and Industry set up a task force composed of the main forces in the industry. The aim was to establish a voluntary code, backed by independent inspection, to persuade the industry to mend its ways.

Arthur Daley has no need to worry just yet. The garage men have poured sand into the government's engine.

The motor trade associations don't want anything to do with the government's nannyish scheme. They are opposed to outside codes of conduct, and even less keen on paying for independent inspection. David Evans, chief executive of the Retail Motor Industry Federation, says that a new supervisory body would cost the industry millions of pounds. “This is the wrong time to be squeezing the lemon,” he says, adding that the problems facing consumers have been exaggerated.

Exaggerated? Estimates of consumer losses from faulty car repairs and servicing range from the £170m a year suggested by the Office of Fair Trading (OFT), to as much as £4 billion, based on investigations by consumer organisations. The OFT says that nearly half of all the 31,000 garages in Britain are providing a poor service. As many as one in five routine services or repairs are so dishonest or unsafe that the perpetrators could be prosecuted.

More than a million customers complain annually about car servicing and repair. Complaints to trading-standards departments have doubled since the OFT's first damning report on garages in 1985. For more than 30 years the Consumers' Association has been documenting the trade's dubious practices by rigging cars with known faults and then submitting them for repair. The large franchised dealer is just as likely to give you a poor service or repair as the back-street bodger under the railway arches. The only difference is that the former will charge more.

Most problems are caused by incompetence rather than dishonesty. Cars are nowadays so technically advanced, and so crammed with sophisticated electronics, that some mechanics haven't a clue what lies under the bonnet.

Even where motorists suspect they are being diddled, the consumer is in a weak position. The law gives garages almost unlimited power to keep a car in lieu of payment. Bert Morris, motoring policy manager of the Automobile Association, claims that victims of the trade tend to be the poorer motorists, who cannot

afford to be without their cars.

Presumably garages reckon the advantages of being able to rip off the customer are greater than those to be gained from a governmental seal of approval. Still, the government isn't giving up yet. A large-scale “mystery shopping” exercise is under way in which hundreds of garages nationwide will be tested with rigged cars. The views of individual garages are also being canvassed, in the hope that despite the hostility of their trade associations, some might be willing to sign up to a voluntary code. The costs are minuscule compared with the damage incurred by consumers. The task force estimates that the price of subscriptions to the scheme would range from £100 for the smallest to £1,000 for the largest garages.

If the voluntary approach fails, there are hints that ministers will legislate. But trying to impose statutory licensing on such a fragmented trade would be a nightmare. Round one to Mr Daley.

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Railways

When safety is dangerous

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Spending on rail safety has nothing to do with rational analysis

TWO weeks ago a young woman threw herself in front of a train as it sped through Hitchin station in the rush hour. Within minutes, British transport police had sealed off the station. This closed the East Coast main line in both directions between London and Edinburgh for four hours. There was chaos at King's Cross, and ambulances and extra police had to be called to deal with the crowds.

Contrast this incident with how motorway accidents are dealt with. Once the injured have been cared for and the crashed vehicles removed, the priority is to get the motorway open. The reason why rail and road deaths are treated in a totally different way defies rational analysis.

A striking example is the government's commitment to massive safety investment on the railways. The policy is in line with the recommendations of the joint safety inquiry following the Southall and Ladbroke Grove crashes. The inquiry recommended that the "advanced train protection system" should be installed across the network saving, possibly, an average of two lives a year at a cost of £2 billion—roughly 200 times more than is spent on preventing a road death (see table). But as the inquiry was given a blank cheque, thanks to a promise from the deputy prime minister, John Prescott, it is hardly surprising that its joint authors, Lord Cullen and John Ulf, promptly cashed it. Their report noted: "We are not, therefore, called on to come to any judgment on whether these [safety] systems satisfy a cost-benefit analysis." In a fine example of circularity, ministers now quote the report in support of their policies.

The price of life

Cost of one life saved by:

	£m
Advanced train protection system	20.0
Train protection warning system	5.0
Implementing transport department guidelines on rail safety	3.2
Implementing transport department guidelines on road safety	1.1
Actual local authority spending on road safety	0.1

Source: DETR

The failure to analyse whether such disproportionate expenditure on rail safety makes sense is only now being questioned. The Parliamentary Advisory Committee on Transport Safety points out that if the consequence is that rail fares go up and more journeys are made by car, more people will be killed. Rail is a relatively safe form of travel. Since 1967 there have been 77 fatal rail crashes in which 308 people lost their lives. On average more people die every day in road accidents than are killed in rail crashes in a year.

Despite popular myths about the effects of privatisation, rail travel is getting safer. Research by Andrew Evans, professor of transport safety at University College, London, shows that fatal train accidents per billion train-kilometres have consistently declined from 11 a year in 1967 to three a year in 2000.

The case for rail-safety investment is usually defended on the ground that it reflects the concerns of voters. But when the public is asked whether a higher priority should be placed on saving lives on the railways than on the roads, the answer is an emphatic no. Even when the question is skewed to reflect the possibility of a large-scale loss of life in a rail accident, and even when the question was asked after the Hatfield and Ladbroke Grove crashes, the public still said no. Michael Jones-Lee of the Centre for the Analysis of Safety Policy, which conducted this research, believes that current policy is driven more by the media than by public opinion.

So far, few have questioned whether the cost of fitting hugely expensive rail-safety systems to clapped-out old rail networks makes sense. The politicians prefer to keep their heads well down. The safety regulators are silent. The public inquiry system has bowed to ministerial whim. If the institutions are scared and the politicians frightened, no wonder the public is confused.

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Health

Glasnost

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Small steps in the right direction for the National Health Service

Get article background

IF GORDON BROWN were to bump into an ancient carpet maker in Marrakech, he would probably tell him how to do his job properly. The meddlesome chancellor has announced not only that the health service needs more cash, but also that it needs to be reformed. This will not come as news to Tony Blair and Alan Milburn, the health secretary, who last year produced a ten-year plan to rejig the health service, along with a silly pledge to raise health spending up to the mobile target of the European average. In truth, much of what passes for radical reform in the health service is merely common sense. But, almost as if he were fending off the chancellor (perish the thought), the health secretary has fleshed out some ideas that foreshadow reform worth the name.

Mr Milburn revealed that a BUPA clinic attached to an NHS hospital in Surrey is likely to become the first of 20 new fast-track treatment centres that the government wants to create by 2004. The aim is to insulate routine surgery from the disruptions caused by emergencies; the centre will eventually treat up to 12,000 tax-funded cases a year. This ought to help reduce local waiting times for surgery, which are high even by English standards. Although the NHS already buys operations from the private sector on an occasional basis, co-opting a whole hospital in this way is a new departure.

Private companies cannot, of course, conjure new doctors from thin air any more than can the government. Using private facilities and support staff can increase productivity, but only up to a point—which is why the government is also trying to lure in foreign doctors and health-care companies to run hospitals in England. In this case, both the price and the working arrangements for the staff have yet to be sorted out in detail.

The number of patients involved is minuscule (indeed, any really big improvement in NHS waiting times would threaten BUPA's core business: Clare Hollingsworth, managing director of BUPA hospitals, says the numbers involved are “very much on the margin”). Nevertheless, it does seem as if the government is inching towards a system in which the state pays for health care, but is no longer its monopoly provider.

Public-sector unions are predictably outraged, but patients should be able to understand the distinction between the private treatment some of them will be offered, and private funding. Having different sorts of providers of health care is a way of moving towards offering patients real choice. On December 6th, Mr Milburn announced that those waiting an especially long time for treatment will be able to choose an alternative hospital. Choice ought not to be a booby prize for endurance, but the government has to start somewhere. As Tony Harrison of the King's Fund, a health care think-tank, says, “we're beginning to see the outlines of competitive policy”.

Labour, of course, doesn't like to use rude words like “competition”, but that is the direction in which its health policies are heading. If an impatient electorate gives it the chance, the government might yet prove that a tax-funded system could provide a consumerist service. Unless, of course, NHS reform gets messed up by ministerial power struggles—an unhappy prospect, as commuters on London's Tube will testify.

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Law and religion

Speak no evil

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Curtailing freedom of speech to protect religion tends to produce silly results

IS IT possible to make a clear distinction between stirring up religious hatred, hurting people's feelings and legitimate theological argument? The government's emergency anti-terrorism legislation, now speeding its way through the House of Lords, includes a prohibition on inciting religious hatred that assumes such a line can sensibly be drawn. Experience with existing rules suggests otherwise.

In an unprecedented rebuke to a private broadcaster, the Radio Authority—which regulates matters of good taste and decency on the air waves—recently upheld six of the 14 complaints made against Premier Christian Radio, which claims to reach 200,000 in the London area, by the Mysticism and Occult Federation. As a result, the radio station was shown a “yellow card”—potentially a first step towards banning it from the airwaves.

Among the statements criticised were the claim that it was “crazy” to consider Christianity compatible with homosexuality; an assertion that the other religions' sacred books were “full of superstitions and absurdities”, a jocularly dismissive reference to non-Christian faiths—“Buddhism, Hinduism, Rheumatism”—and an advertisement from a church offering to “deliver” listeners from “occultism”.

PCR has apologised for breaching the Radio Authority's code of practice and says it has tightened procedures to make sure that such controversial material is not broadcast in future. But its executives wonder whether the framers of the 1990 Broadcasting Act foresaw that practitioners of mysticism and the occult would be among those seeking protection from offence.

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Bagehot

To a nunnery go

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Quis custodiet?

THIS may reflect nothing more than a deplorable lack of cynicism in your columnist. But Bagehot believes that if you measure it against almost any other democracy, British political life is pretty free from corruption. A whiff of time, decay and boiled cabbage hovers in the corridors of the Palace of Westminster, but the place hardly reeks of sleaze. Even those who say that Parliament is “in crisis” tend to worry more about its perceived irrelevance than its perceived venality. But never underestimate the capacity of a supposedly sagacious institution to inflict unnecessary harm upon itself. This week, after a sequence of perverse decisions, taken in secret by one of its most obscure bodies, the House of Commons contrived to make a martyr out of a little-known official, and so to convey the impression that the institution and its members have something dirty to hide.

Elizabeth Filkin is the parliamentary commissioner for standards. Her job is to make sure that MPs conduct themselves in accordance with rules that Parliament itself devises. She is appointed by the MPs whom she is supposed to regulate: in practice, by the Commons “commission”, which consists of six MPs chaired by the speaker. The results of her investigations are reported to a committee of MPs known as the standards and privileges committee, which decides after receiving her reports whether an MP under investigation has strayed from the path and what the delinquent's punishment should be.

Many MPs claim genuinely to believe that self-regulation has much to commend it. Apart from anything else, it entrenches the vaunted sovereignty of Parliament by keeping the courts and other potential busybodies at bay. But you have only to describe the arrangement to see that self-regulation can work only if the self in question desires to be regulated. What if it doesn't? Meeting in secret, the commission has evidently decided that the Commons no longer desires to be regulated by Mrs Filkin: the commission has decided to re-advertise the job instead of giving her an expected second term. Nor, apparently, does it desire to be regulated quite so thoroughly by anybody else. For on top of easing out Mrs Filkin, the commission has decreed that her successor (should any lickspittle apply) will be required to work for three days a week instead of four, and with fewer staff.

On digesting this unwelcome double message, Mrs Filkin wrote a letter of complaint to the speaker, inviting him to publish it. He declined, for reasons that have become obvious now that the letter has found its way into the newspapers.

Mrs Filkin says that she knew when taking the job that pressure would be applied on her by some MPs and their supporters when facing an investigation. However, the degree of pressure applied had been “quite remarkable”. In some cases, she says, it was applied directly by ministers. “In others it has been applied indirectly by unchecked whispering campaigns and hostile briefings, some executed by named civil servants.”

Even if you have never before heard of either Mrs Filkin or her job, these are damaging charges. British political life may be relatively clean. But a legislature that gives itself a standards commissioner, only to disparage and dismiss her when she performs her mission with zeal, is in danger of looking contemptible in the eyes of its electorate. Some of her detractors accuse Mrs Filkin of failing to discriminate between vexatious complaints that should have been briskly dismissed and serious wrongdoing that merited proper investigation. Tam Dalyell, an elder of the House, fulminated on the radio that the names of severable honourable members had been besmirched during investigations by Mrs Filkin, only to be cleared in the end. That, however, is the nature of investigations. And Mr Dalyell failed to point out that in many cases the accused were in the end cleared not by Mrs Filkin but—often without persuasive reasoning—by the government majority on the standards committee to which she is compelled to report.

Shoot the referee

Nor, thanks to the political parties themselves, is it always easy to tell whether an allegation is vexatious or not. In the dying days of John Major's government, after several Tory MPs had been caught out accepting cash in return for asking parliamentary questions, the Labour Party made a deliberate decision to exaggerate the extent of Tory sleaze. The tactic helped Labour to victory in the 1997 election. Since then, the Tories have been intent on revenge. The upshot is that both parties are now prone to portray their opponents' every minor infraction as a grave case of corruption demanding Mrs Filkin's attention. Having used her as a weapon against one another, they now blame her for bringing Parliament into disrepute.

Besides, it is not in fact the investigation of vexatious complaints that has done Mrs Filkin down. Her own belief is plainly that her fate was sealed as soon as she began to pursue complaints against members of the government, such as Peter Mandelson, the former cabinet member and present *eminence grise* whom she reprimanded for failing to declare a home loan from a fellow minister when he applied for a mortgage. Other prominent “victims” have included John Reid, the Northern Ireland secretary, and Keith Vaz, the former Europe minister, whose business affairs are still under investigation.

Given the manner of her removal, says Mrs Filkin, no successor would be likely to fare much better. Without offering minimal job security, it will be difficult for Parliament to recruit a regulator willing to show the employer-embarrassing independence the job requires. She is almost certainly right. Martin Bell, a former MP and self-proclaimed crusader against sleaze in government, says that he was headhunted for the job but chose in the circumstances to turn it down. Whoever takes over will be careful not to repeat her mistakes. The House of Commons will have an easier life, and a diminished reputation.

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OPINION

The loss of diversity

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The broad diversity of technological design appears to be narrowing. Is innovation running out of big ideas to exploit? Discuss

AS A section of the community, technologists ought to be a fairly harmonious lot. They share a similar set of unshakeable axioms, inculcated from youth, about the way the physical world works—and how to make it better. Though technology may nowadays have absorbed much of biological science as well as quantum mechanics, it remains essentially a framework for solving problems by means of Newtonian principles which, for most practical purposes, are self-evident and demonstrably true.

It is a world in which certain trusted notions can be taken for granted. What goes up comes down. Nothing travels faster than the speed of light. Opposite charges attract. Technology even has rules to govern cases where, in the real world, rules formulated for ideal conditions break down. For instance, the splendid first law of thermodynamics says in effect that, when putting energy into things and getting work out, the best you can do is break even. The more pragmatic second law of thermodynamics says, forget it, you cannot even do that.

Why not? Because, without the second law, it would be possible to build a perpetual motion machine—and thousands of years of trying have shown that to be a laughable waste of time. In the real world, friction gets in the way. Technically speaking, the tendency to disorder (ie, the inevitable increase in entropy) is an immutable fact of life. Upon such rugged intellectual foundations is technology built.

Yet, for all its single-minded predictability, technology has always flourished on a diversity of opinions and an unerring ability to invent alternative solutions. Even when working within the same physical constraints, there have been a variety of ways of meeting the same specific requirement. Consider the radically different aircraft designed by Lockheed Martin and Boeing for America's recent $19 billion Joint Strike Fighter (JSF) contract. Both designs met all the exacting demands made by the five different armed services that will re-equip with the JSF in a decade's time. But the Lockheed Martin F-35 was judged to have met those demands far better than the Boeing F-32. Thanks to the competitive tender, the customers should finish up getting a far better product.

Such are the virtues of having design teams compete. But the JSF will probably be technology's last big endeavour to be selected competitively. With the next major contract now decades off, the Boeing team will be dispersed, leaving America (like Europe) with only one consortium capable of designing and building warplanes in the future. This trend to single-supplier technology is under way in various other fields—from submarines to air-traffic-control systems.

The increasing cost of developing high-tech products is only one of the reasons why technological choice is on the wane. The trend to globalisation has not helped. Nor have stifling safety standards that continue to emphasise detailed design specifications rather than set minimum levels of performance—and then leave the methods of achieving those performance targets up to the designers.

Design as a commodity

But it is not only industrial concentration that is limiting technological choice. An increasing number of high-tech products have become commodities. There is nothing to choose, for instance, between a 256-megabit DRAM chip from Toshiba or Samsung. Through licensing and patent-trading, manufacturers have converged on a single solution.

Is this because technology is running out of physical phenomena to exploit? Engineers who design F1

racing cars—the most technologically sophisticated vehicles ever conceived—say there are no big quantum leaps in improvement left to be achieved (see article). The last “big idea” in motor racing was ground effect, introduced by Lotus in the 1980s. By contrast, computing may still have a few more tricks to play (see article).

Readers interested in continuing this discussion further—and to raise points about other stories in this issue of *TQ*—are urged to go to our online forum, where they can post their thoughts under the appropriate heading. This is intended as a place for genuine discussion, and the bigger the differences in opinion the better. It is not the place for offensiveness or shameless self-promotion—corporate or personal—which will be taken offline immediately. So let the heated, albeit good-natured, arguments begin.

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MONITOR

No laughing matter

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Are the new crop of game consoles more—or, indeed, a good deal less—than they are made out to be?

EPA

ONE of the earliest forms of learning behaviour is game-playing, in which children often become experts by the age of five. The technology of game-playing follows a similar learning curve. So this year-end buying season marks the beginning of a fresh five-year battle for dominance among the latest generation of game consoles.

Sony's offering, the PlayStation 2 (PS2), already has a full year's lead in this particular race; but both Nintendo's GameCube and Microsoft's Xbox have only just become available to a wider audience. The three platforms are as advanced as consumer pricing allows. They all boast high-performance processors and equally formidable graphics chips to create impressive imagery. The factors that will set these consoles apart from each other are software and what for games consoles are unconventional hardware features.

When Sony's PS2 was first released in Japan in March 2000, its initial sales relied significantly on the console's ability to play films on digital video discs (DVDs) as well as games. Indeed, the top-selling software title for PS2 last year was a science-fiction movie, “The Matrix”.

These initial sales gave rise to the hypothesis that, in order to succeed, the new generation of consoles must do more than just play games. With the plethora of expansion ports available on the PS2, Sony seemed poised to insinuate its console into the middle of any home-entertainment system, thereby taking over the living room (assuming other Sony products had not done so already). Although it requires the purchase of an accessory, Xbox's ability to play DVD movies is interpreted in some quarters as Microsoft's attempt to gain a foothold in the living room, too.

More careful examination, however, shows that the PS2 DVD phenomenon was a brief anomaly. At ¥29,000 ($270), the PS2 was, in effect, the cheapest DVD player on the Japanese market when it was launched early last year. Once the price of DVD players had dropped sufficiently, PS2's sales became more like those expected of games consoles. In North America and Europe, PS2 never had many DVD-motivated sales, presumably because DVD players had become cheap enough by the time it was released there. That said, in the first two months after Sony began selling a DVD remote-control add-on, the company claims to have sold “tens of thousands” to an installed base of roughly 5m consoles.While comparatively small, this number suggests that at least some people are using their PS2s as secondary DVD players.

For Xbox, providing DVD playback added little or no cost to the console itself. It also offers the option to keep teenage DVD viewing well clear of the communal living room. But the claim that this feature is an indication that Microsoft intends the Xbox to be more than a high-end games console is not persuasive.

Of the three contemporary consoles, the GameCube deliberately omits DVD playback, though that may not be such a flaw. Thanks to a licensing agreement with Nintendo, Matsushita, the world's largest consumer-electronics company, is producing a DVD player (enigmatically named Q) with a built-in GameCube under its Panasonic brand. Matsushita plans to sell the Q only in Japan, but that could change with time.

Generation gap

Despite the relatively short history of games consoles, one industry-wide pattern has emerged: a new model has only five years before the next generation supplants it. Nintendo has followed this cycle for the past three product generations. Sony's transition from the original PlayStation to the PS2 also came right on cue. It is too early to say whether Microsoft and its fledgling Xbox will do likewise. If Xbox succeeds in establishing itself, it may have to.

What has emerged is that success in the games-console business is more about pacing of innovation than being first out of the gate with the latest technology. But equally important has been the ability to attract the right games. Sony proved that when it broke into a market dominated in the mid-1990s by Nintendo and Sega—and beat them both at their own game.

Besides giving independent game-development companies a bigger royalty cut on PlayStation software, Sony's trick was to support them with a massive marketing blitz—much as Intel does with its pervasive “Intel inside” advertising campaign. Interestingly enough, while the Xbox contains a Pentium chip, none of the marketing materials touts this fact.

Microsoft will need every trick in the book if it is to survive in this notoriously fickle market, where brand loyalty ranks second to game quality. Microsoft's acquisition of developers—to gain Xbox-exclusive software—shows a more than passing understanding of this situation.

While Nintendo's traditional game player has been 14 or younger, Sony's success with the original PlayStation proved the importance of the 18-to-34 age group. This is the target market that Microsoft has in its sights—and one that even Nintendo is beginning to eye with interest. Unlike its rivals' macho slabs of black hardware, Nintendo's purple little GameCube may look decidedly non-threatening. However, given Nintendo's longevity and continued success, the diminutive box should not be discounted.

Unlike Xbox, which has a hard-drive and an Ethernet port built-in, GameCube and PS2 have neither. Sony and Nintendo are uncharacteristically unanimous in their assertions that there is no point in burdening the customer with the extra cost until they can offer games that take full advantage of such features. But Sony's recent broadband alliance with AOL Time Warner may well provide the necessary impetus. Both consoles can be retrofitted with network connections and more storage capacity through built-in expansion ports, though customers will have to pay extra for these add-ons.

While PS2 has spent the past year accumulating a broad portfolio of titles, its blockbuster games are only now beginning to appear. GameCube and Xbox will each launch with only a handful of titles, and it is too early to say whether any of these first games will play kingmaker, or if it will take another year before top-flight games appear on these newer consoles.

One recurring theme in this fickle business is that the console-maker that dominated one generation of game machines has rarely managed to keep its lead into the next generation. Sony is trying to buck this trend. But, despite its one-year lead, it faces renewed competition from Nintendo and now from Microsoft, with its formidable war-chest, as well.

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MONITOR

Unzipping the server

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A new standard called Infiniband promises to clear the communication bottleneck among servers. Will it catch on fast enough to save computer makers that are slugging it out at the lower end of the market?

DESPITE all the work that goes into making microprocessors and network connections ever faster, the biggest problem in computing today is neither crunching numbers nor moving data. It is getting the data into and out of the machines themselves. Long ignored in the bowels of networks, the input/output (I/O) function in computers and servers has emerged as their most significant bottleneck—sapping the performance of high-speed chips and adding myriad complications in networks, no matter how quickly chips and fibre-optics move the data.

A new I/O standard called Infiniband aims to fix all that, promising to boost I/O speeds and to make server connections as easy as plugging a toaster into an outlet. Infiniband in effect turns the server inside out, eliminating the bottleneck by removing the I/O function from the server entirely, and allowing disparate server components to be networked together as if they were all part of a single unit.

At the heart of the problem is lagging innovation in computer I/O infrastructure. Almost all computers and servers today rely on the decade-old Peripheral Component Interconnect (PCI) bus design to move information from the microprocessor to peripheral devices and out to the network. PCI connects the peripherals directly over individual copper wires, translating from the language spoken inside the machine to the languages spoken by the peripherals. For years, PCI proved more than adequate for most computing needs, handling the workflow from databases and the relatively slow network traffic.

Yet PCI development has lagged far behind progress on other components of servers and computers. As processor speeds doubled every 18 months, following the venerable rule of Gordon Moore, one of the founders of Intel, and networking speeds also accelerated at breakneck pace, growth of I/O bandwidth trudged along, doubling only once every three years or so. Today, as processor speeds cross the 2 gigahertz barrier and network speeds approach 10 gigabits per second, typical PCI connections have still reached only 133 megahertz.

As processor speeds doubled every 18 months, and networking speeds also accelerated at breakneck pace, growth of I/O bandwidth trudged along

Nowhere has this proved more troublesome than in data-centres—the bunker-like facilities that house corporate information in hundreds of racks of high-speed servers. As engineers work to squeeze every scrap of power from their servers to meet the growing demand for services, the additional milliseconds taken up by PCI are proving a real drag along the information highway. Worse, the general inflexibility of PCI when increasing the capacity of a data-centre has made adding new servers—almost a daily chore, but getting worse all the time—an arduous and costly affair that can mean hours of misery for network engineers.

Infiniband seeks to solve most of these problems by eschewing direct copper connections in favour of signals that are processed and handled by logic circuitry. In short, it adds intelligence to the communication that takes place between the various peripherals and components, forming what amounts to an I/O network among them. The new standard borrows from the design of mainframe computers, which use a so-called “channel-model” to permit components in different machines to share data simultaneously with each other in a special network channel.

In much the same way, Infiniband uses channels of data to create a “network fabric” in which all components are connected into a weaving of pathways capable of supporting multiple channels of data

simultaneously. The concept is not unlike that of the USB (universal serial bus) connector found on the back of most new personal computers, which allows all manner of devices to be connected simultaneously with a simple, high speed connection.

The initial I/O function into the server rests in the hands of a dedicated switch at the gateway, which carries the brunt of the work done in translating the standards used on the network (such as Internet Protocol) into the control language used internally by the server. Within the system created by Infiniband, special adapters connect logic and memory to devices such as storage and network controllers. In theory, that allows a microprocessor on one side of a room to connect to a hard-drive and CD-ROM on the other side at blazing speeds.

The net result, say Infiniband backers, will be a dramatic increase in performance—at least a two- to four-fold increase over the speed of PCI. Better still, the new design promises a more reliable and more easily expandable system, which is also simpler to manage. Users can add an unlimited number of devices and servers to an Infiniband network, simply by plugging them in, with no effect on performance. And because Infiniband servers can be made to function as foot-soldiers, doing only what they are commanded to do, they can be made without bulkier peripherals—allowing more to be stuffed into smaller areas such as server racks and so saving money.

All this will, according to many analysts, help to redefine the server business. In the process, it will allow ailing server manufacturers to differentiate themselves in the lower and middle part of the server market, where competition is the fiercest. The software and management tools that are designed for Infiniband systems will become the server makers' “special sauce” that will justify their charging a premium for their hardware. “It's an opportunity for the server guys to recapture some of the data-centre market from the [networking] guys,” one industry insider says.

One after another, almost all the leading server manufacturers have rushed to release Infiniband products. In the first generation, the manufacturers have simply added Infiniband features to existing PCI designs. But a range of new products is expected early in 2002 that will take matters a few steps further. Meanwhile, more than 40 start-up firms—ranging from Lane15, a software developer based in Austin, Texas, to Mellanox, a fledgling chip maker in Yokneam, Israel—are jostling for a share of the market. According to IDC, a market-research firm in Framingham, Massachusetts, annual sales of Infiniband servers could be worth $7.7 billion by 2005.

No matter how rosy the projections, however, Infiniband server firms could find those riches harder to come by than they previously imagined. Faced with the financial downturn, corporate IT managers are shying away from new technology and opting for the tried and true, says Vernon Turner, an analyst at IDC.

Meanwhile, competition from other technologies—such as Intel's new 3GIO, which is targeted at desktop and low-end servers—threatens Infiniband's glory. Another source of competition will be the ten gigabit per second Ethernet standard for networking, which promises to surpass Infiniband's speed using technology that network engineers are familiar with. For its part, Intel insists that all the new technologies complement Infiniband, each offering its own strengths and uses—3GIO for chip-to-chip communication in PCs and low-end servers, Infiniband in server-to-server communication, and ten gigabit Ethernet for long-distance communications between data-centres.

Perhaps the most significant development of all, however, is that computer I/O is at last getting the respect it has long deserved. In the process, it may just save the computing business as well.

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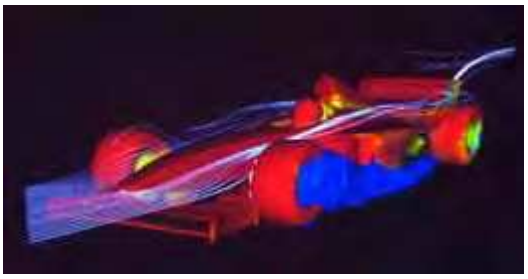
CAR DESIGN

Quiet revolution on the track

Dec 6th 2001
From The Economist print edition

Designing F1 racing cars has little to offer makers of family saloons. But it is helping to create a whole new approach to solving problems in engineering design



Blunt instrument—turning air flow into downforce

HOW looks deceive. Streamlined as the modern Formula One (F1) racing car and its American cousin in the Championship Auto Racing Teams (CART) series may seem, when it comes to slipping through the air they are more like barn doors than the average family car. To eke out more miles per gallon of fuel, car makers from Detroit to Nagoya have learnt to give their models the slippiest of shapes. In aerodynamic terms, the average car nowadays has a “drag coefficient”—a measure of its resistance to being moved through the air—of between 0.3 and 0.4. Open-wheel racing cars, by contrast, can have drag coefficients that are twice as big. So much for racing improving the breed.

Actually, at the level of F1 or CART, the conditions that racing cars face are so vastly different from those encountered by motorists on the road that they require totally different engineering solutions. With around 800-850 horsepower from their engines and a total weight of no more than 600kg for an F1 car and 800kg for a CART racer, these thoroughbred machines have so much torque they can spin their wheels throughout almost their entire speed range. In other words, they have more than enough power to go as fast as is physically possible on any racing circuit in the world.

So why do teams struggle to make their engines ever more powerful? Because the surplus power can be used to do one thing that is not needed at normal road speeds: create massive amounts of ground-hugging downforce. That helps the car go round corners quicker and remain glued to the road at high speed.

Unfortunately, because of the nature of air circulation, any downward-pointing force created aerodynamically generates a backward-pointing resistance in the process—just as an increase in the lift of an aircraft wing as the flaps are lowered for take-off or landing creates more drag in the process, forcing the pilot to open the engine throttles to overcome the extra wind resistance. So with racing cars: the greater the engine power, the greater the potential drag that the designer must then seek to overcome. That is why the battle for supremacy on the racing circuits these days is being fought as much by aerodynamicists at team headquarters as by drivers on the track.

It is no coincidence that the racing team that made the biggest leap in performance of late, WilliamsF1, is reckoned to have the most powerful engine, even though it is still in its early stages of development. The firm, based in Grove, Oxfordshire, west of London, is rumoured to be getting more than 880 horsepower from the latest version of the V-10 engine built exclusively for it by its partner, BMW of Munich. The secret lies in the extremely light and stiff composite material made of boron carbide in an aluminium matrix used for the engine. Although still not as reliable as more mature designs from Ferrari and Illmor (maker of the Mercedes engine for McLaren), the extra horsepower has given WilliamsF1's chief aerodynamicist, Geoff Willis, a useful margin to play with.

How it has been used reveals as much about the way engineering is evolving as about the development of the Williams FW23 car. For one thing, in much of modern engineering—whether designing semiconductor circuits, computers or jumbo jets—there are no great quantum leaps in performance waiting to be discovered. In motor racing, the last “big idea” was the ground-effect concept introduced by Lotus in the 1980s and promptly banned by the sport's governing body, the FIA. Nowadays, improvements in performance tend to come from tedious but crucial attention to minutiae.

That is especially true for racing cars. “You are always looking for the hundredths of seconds,” says Gavin Fisher, WilliamsF1's chief designer. “If you find enough of them, you will have found the second that gets you to the front.” Finding those minute incremental improvements requires ever more powerful computational tools. In aerodynamics, the most powerful tool for improving a design is computational fluid dynamics (CFD).

This offers designers a way to find out how, at a micro-level, the air is moving over body panels and exerting pressure on them. It does this by first using a “grid generator” program that takes the car's geometric shape, divides it into regions, and then breaks down each of these into millions of minute triangular or rectangular flat panels.

Then, using equations to simulate the effects of Bernoulli's law of the relation between the velocity of a fluid and the pressure it generates, the CFD software computes the pressure distributions over the 1m or so individual flat body panels. By integrating the individual pressure distributions, the software can produce a visual picture of the flow over the car's various components—with the pressure changes shown as different colours in the flow pattern (see illustration). Where the air is moving fastest, the pressure is lowest; where it is moving slowest or has become stationary, the pressure is at its maximum.

By working closely together, aerodynamicists and designers can determine the precise shape of the various bits of the car's body needed to ensure that the air slows down on all upper surfaces but speeds up on the under surfaces. That way they can produce a body shape with maximum downforce. Scale models of the revised panel shapes are then made and tested in a wind-tunnel. Finally, if the models produce the desired effect, full-scale components are fabricated and tested on the track.

As an engineering tool, CFD is now ten years old. But what has made the technique more widely available is the arrival over the past year or so of supercomputing performance at everyday prices. In the process, the way of doing engineering is changing. “I think we are trying to go away from the analysis view and change to a true design view,” says Mr Willis. That means instead of using software aids such as CFD to find out what is going on, engineers can now turn the whole process upside down—and use their new mathematical tools to learn what shapes are needed to achieve certain targets. It seems that, even as it has become an evolutionary business, designing F1 cars has quietly triggered an engineering revolution.

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MONITOR

Machines that answer back

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Software for analysing e-mail inquiries from customers and replying automatically is doing a surprisingly good job

“PRESS one if you are calling to check your balance, press two to set up an appointment.” Such automated telephone services have been annoying callers looking for simple help for several years now. On the telephone, people want to deal with a human being, not a recorded voice putting them through hoops (see article). Yet that does not have to be the case. Consider the success that some companies have had with services that respond automatically to inquiries sent by e-mail. Such software can save a great deal of money on customer services, where training and high turnover of workers is expensive.

There are two basic ways for computers to handle human language. One is purely statistical, which looks for key words, their repetition, patterns and prominence, and matches them against possible responses. Such an approach is flexible, adaptable and cheap. It can also “learn” by using feedback from past interactions to make better decisions in the future. However, accuracy can suffer.

The other approach is a rule-based, grammatical one. This looks for word endings, subjects, predicates and the like. Because it analyses language much as humans do, it is typically more accurate than a statistical approach, but it is more difficult and expensive to design and maintain. It is also less “robust” and does not handle ungrammatical input or changing demands easily.

For this reason, some systems balance the two. Banter, a San Francisco firm that develops customer-response software, has developed a “relationship modelling engine” (RME) that is used by several large companies. Banter's engine first looks at words, word endings and short phrases in an e-mail message to find those that can be given a meaning. At this level, the RME understands that “three weeks ago” is a time-frame, “can you” is a request for action, and “043729-24-023” is an order number. These pieces of knowledge are then fed into a higher-level “semantic engine” tailored to the client company's needs. The semantic engine contains real-world knowledge of the products the company sells, the services it offers, and possible responses to e-mail inquiries. The patterns generated by the RME are then matched statistically with real-world knowledge, allowing a decision to be made about the best response.

Banter claims the software is both accurate and robust. It is telling, however, that its biggest customer, Wells Fargo Bank, uses human agents to vet replies. To address such concerns, Banter offers the client the opportunity to set a minimum “confidence score”—the probability that a selected reply will be appropriate.

Another company offering customer-response software is YY Technologies of Mountain View, California, which leans towards a purely linguistic approach based on the concept of “universal grammar”. YY's software reduces any text, no matter the style, form or content, into meanings and relationships that are independent of the text itself. As with Banter, this is then married with a real-world knowledge base which knows what the company offers and can do for its customers. The YY software focuses on auto-replies, answering only the relatively small number of queries that it is confident about, and leaving the rest for humans to handle.

Does it work? Natural language is fluid and chaotic. Incoming e-mails have errant spelling, garbled syntax and confused meanings that can flummox even a human. Natural-language software can be taught to recognise the jargon of a given business, slang and common misspellings. Anecdotal evidence suggests that, while most customers seem happy with such services, some still get completely irrelevant replies to their questions. Clearly, it is still hard to teach computers to mimic humans.

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MONITOR

Sound waves beat the knife

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Internal bleeding is dangerous and difficult to treat. A new ultrasound technique promises not only to solve such problems, but also to reduce the need for invasive surgery when treating tumours

THERE are many ways to treat external bleeding—from simple adhesive plasters to complicated lasers. Internal bleeding is, however, much more difficult and dangerous. Lasers and electric currents can penetrate only three millimetres at most into the skin. Tourniquets and clamps can be inadequate, or may deprive healthy areas of blood. The same bleeding problems can also occur during surgery. Now a group of bioengineers at the University of Washington in Seattle hopes to develop devices that treat internal bleeding, bleeding during surgery and even tumours by the same method—a carefully focused beam of ultrasound waves.

Shahram Vaezy and his team have developed high-intensity focused ultrasound (HIFU) devices that can focus the ultrasound to a point as small as one millimetre in size. The focusing is done either by the shape of the ultrasound-generating crystal itself or by a lens placed in front of it. Dr Vaezy compares the process to burning a small hole in a piece of paper by focusing light through a magnifying glass. The heat generated by the ultrasound (creating temperatures up to 80°C) cauterises the open blood vessels. If the aim is spot on, bleeding stops within a few seconds.

The developers claim that HIFU has two further advantages. First, when the sound waves pass through the accumulating blood, it produces “acoustic streaming”, causing the blood to flow away from the injury. That results in a clearer picture of the wound during surgery. Second, when pulsed at a certain frequency, the beam can break down the structure of the tissue, which then seals the wound and eventually causes a healing scab.

Though the idea of using ultrasound this way is not new, HIFU is the first treatment that can be focused precisely without disturbing the skin. It can even be used without anaesthetising the patient. It is hoped that HIFU could eventually be used in a variety of surgical procedures, especially tumour removal—either killing the tumour itself with ultrasound waves, or cauterising the area around it so that it could be removed bloodlessly.

The biggest challenge is focusing the HIFU waves accurately on the bleeding area. Using X-rays to find the internal target would deliver too much radiation to the patient. And while the use of MRI (magnetic resonance imaging) would give more information about internal wounds, the equipment is far from portable. One focusing method, developed by the Seattle team in 1999, uses a Doppler-like system to produce a pinging sound if the focus is directly on the wound. If it is off by as much as a millimetre, the Doppler stays silent.

Eventually, the Seattle team hopes to create a portable device that paramedics could take with them in ambulances. They would first use the imaging sensor to determine the source of the bleeding, and then use HIFU to stop it. When trials start in a year or so, the first question to be answered is whether wounds closed with HIFU eventually reopen. But if the idea lives up to expectations, it could mark the first crucial step away from invasive surgery.

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MONITOR

Turn the handle and talk

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Wind-up chargers are not only for sub-Saharan villages. Mobile-phone users in California could find them useful, too

Tomorrow's field telephone?

THE chances are that you have experienced that sinking feeling when the battery on your mobile phone runs out, cutting you off in mid-sentence. It is also likely that you have heard about the clockwork radios made by Freeplay, an Anglo-South African firm. Put the two together, and the logical conclusion is a wind-up phone-charger. Freeplay has just unveiled such a device, developed with the accessories division of Motorola, one of the world's largest handset makers. The FreeCharge, as it is known, marks Freeplay's departure from the technology with which it is most closely associated: clockwork.

In fact, Freeplay has been moving in this direction for some time. Its first clockwork radio, launched in 1996, was powered by a “tensator”, a spring that supplies a constant force, similar to those used in seat-belt retractors and builders' tape-measures. A tensator delivers energy far more evenly than the coiled springs found in clockwork toys. Driving a small dynamo through a gear chain, the tensator was able to power the radio for about half an hour after 30 seconds of winding.

The next step was the addition of a “spring saver” circuit to improve the clockwork generator's efficiency. By storing excess electrical energy from the dynamo in a capacitor, and getting the spring to unwind only when the capacitor charge falls below a certain threshold, the playing time can be doubled.

The idea of storing energy from a spring in an intermediate electrical form was taken a stage further in Freeplay's clockwork torch. This contains a rechargeable battery, into which energy from the spring is dumped. Without the battery, the spring can power the torch for only three or four minutes. But running time can be extended by repeatedly winding up the spring and transferring its energy into the battery. Doing this three times allows the torch to run for up to 12 minutes.

A third-generation radio, operating along similar lines, was launched in 1999. Its spring is wound for half a minute, and then unwinds over six minutes, charging a battery. Because it is far more efficient to unwind the spring at a constant speed, rather than stopping and starting it, this provides enough energy to run the radio for an hour. It also means the spring-saver circuit is no longer needed.

The final step is to do away with the spring altogether, and charge the battery direct from the winding action. That is how the new FreeCharge unit works. The crank-handle drives a dynamo through a clever transmission system, and the resulting electrical energy goes straight into a rechargeable battery.

The key is to do all of this efficiently. Because some users turn the crank-handle faster and harder than others, a nifty three-stage gearbox and a dynamo based on powerful neodymium-iron-boron magnets is used to ensure that efficiency is largely independent of the torque applied. The result is that, if you wind the handle faster, it gets harder to turn, and the battery is charged more quickly.

This also means that it is hard to give precise figures relating the amount of winding time to calling time. But, says John Hutchinson, Freeplay's director of technology, it typically works out at about 45 seconds' winding for a four- or five-minute call. A more vigorous user can, however, get a six-minute call from 30 seconds of winding.

Getting the energy into the FreeCharge's battery is only half of the problem, however. It also has to be able to feed into the mobile phones, all of which relate to their chargers in different ways. So Freeplay and Motorola have devised a range of plug-in pods that allow the FreeCharge base unit to talk to phones from different makers—including Nokia and Ericsson as well as Motorola.

The FreeCharge is about the size and shape of a medium-sized handset, weighs 220 grams, and will cost around $70 when it goes on sale in America in December 2001. As with previous Freeplay products, the FreeCharge will initially be sold to consumers in America and Europe, but it is also intended for use in the developing world.

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DIALOGUE

The same—only more so?

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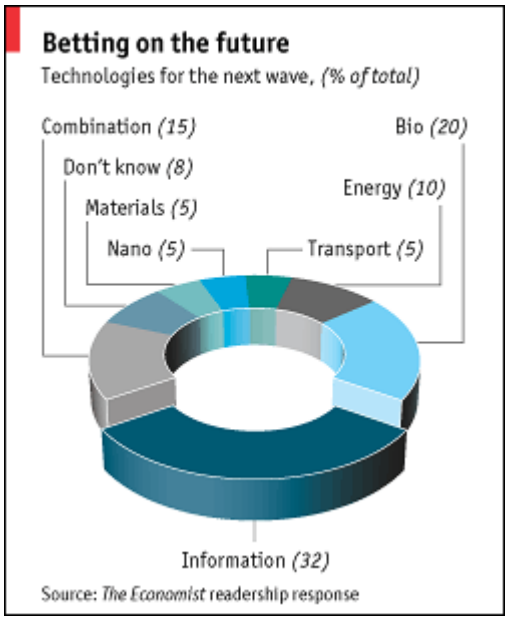
In the last issue, we asked readers what technologies they thought would propel the next big surge in economic activity. The most popular view was that they will still be IT-based



INSTEAD of running for 50-60 years at a time, as they have done since the 18th century, the long waves of industrial activity identified by the Austrian-born economist, Joseph Schumpeter, have lately been coming thicker and faster. The most recent, which got going in the early 1950s on the back of petrochemicals, electronics and aerospace, lasted for only 35 years. The present one, which started in the late 1980s following the widespread introduction of computer networking, and gathered momentum as the industrial world embraced the Internet, is expected to last for no more than 25 years, fizzling out in 2010-15.

So what was that loud crashing sound in April 2000, when America's technology-dominated Nasdaq stockmarket plummeted and wiped out countless dotcom and telecoms firms that imagined they could defy gravity? Jarring as it was, our readers believe it was just the crunch of gears that occurs when the heady upswing part of a Schumpeter cycle gives way to more mature growth.

The present cycle—the fifth since the Industrial Revolution—has not even peaked. It will doubtless do so over the coming decade. After that will come a short and sharp decline as a whole new set of technologies start jostling for investors' attention. With the next big wave of economic activity set for take-off in a decade or so, it is not too early to take bets on which of today's fledgling technologies are most likely to propel the next big surge of business opportunity.

The biggest single group of respondents—accounting for 32% of valid replies—argued that information technology (IT) is a long way from exhausting its potential. Most of this group expected to see a powerful new economic engine emerge that used new hardware components such as quantum computing allied to a service-oriented form of software architecture, and supercharged with tools borrowed from information management, language processing and artificial intelligence.

As one reader put it, where the last wave related to the spread of information, the next will depend on "more effective use of information and simpler ways of acquiring it." In the same vein, another reader argued that the technologies of the next wave would "change from dealing with vendor-driven processes to addressing user-driven ones." The next technology should be "a television-telephone-fax-notebook machine that can talk to me in my language," wrote an infuriated chairman of one global company.

Several readers pointed out that, in its ability to assign meaning to raw data, the humble PC was on track to outstrip the human brain by 2020, and that supercomputers would do so by 2010. The implication was that the world could soon have hyper-intelligence on its hands. And, just as with the nuclear bomb, there would be no way to turn the clock back and uninvent it. So society had better learn to use hyper-intelligence wisely—and pray that, in return, it did not treat human beings as badly as they had treated, say, mountain gorillas.

Around 20% of the replies reckoned that innovations in bio-engineering and proteomics would drive the next industrial wave. Most in this category cited the way such technologies had gained enormous potential since becoming, in effect, a branch of information technology. For the next high-tech wave, said one reader, look at the point where computers and genes coexist. "It is not the genes themselves we

value, but the information they hold."

That said, a large proportion of this group seemed to be betting on the life sciences more out of anxiety than logic. A surprising number believed—in some cases, passionately—that such an economic driver would somehow transform ageing into a curable disease. Oddly, this was seen to be a universal good. Nobody seemed to care about the fearsome implications of increased longevity.

Innovations in energy research, especially in fuel cells and the hydrogen economy more generally, accounted for 10% of all answers. Some used arguments based on global warming to support their claim. But in what was clearly a reaction to the attack on the World Trade Centre, most in this group argued that mounting terrorism would threaten oil supplies from the Middle East. Meanwhile, innovations in ground transport, smart materials and nanotechnology were each backed by 5% of respondents.

An interesting minority—accounting for 15% of replies—took the view that no single technology would drive the next surge in economic activity. A combination of ubiquitous communications, intelligent systems, proteomics, fuel cells and nanotechnology was the favourite.

What this group seemed to be suggesting was that the long boom-bust cycles in industrial activity depended more on some paradigm shift than on any particular innovation. It is true that each new Schumpeter wave has featured not one, but a whole series of successful innovations in quite unrelated fields, all set in motion by some upheaval in social, political or economic thinking.

Actually, Schumpeter pointed out that each time whole new industries were launched on the back of some set of innovations (from cotton, iron and steam to semiconductors, computers and telecoms), a novel form of credit creation occurred to support those fledgling industries. It was the fortuitous confluence of these two phenomena that created the conditions (ie, the paradigm shift) for take-off.

Venture capital, stock options and initial public offerings were the credit instruments of choice last time. One reader suggested that, next time, the instruments of choice could be based on the ability to transfer electronically the ownership of property, real or intellectual, using a new stratum of standards termed etiquettes. That may be unimaginable today. But so a generation ago was the bizarre idea that people would happily work around the clock, seven days a week, for a pittance in the belief that their stock options would be worth something one day.

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REPORTS

Just talk to me

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Speech recognition: At long last, speech is becoming an important interface between man and machine. In the process, it is helping to slash costs in business, create new services on the Internet, and make cars a lot safer and easier to drive

IN THE early days of computing, information was put into computers by flipping switches. After this came the relative sophistication of loading programs and data by means of punched cards or punched paper-tape. These were followed in their turn by such devices as the keyboard, the mouse, the trackball, the joystick, the touchpad and the touch-sensitive screen. Throughout all this, speech—the most natural, and perhaps the most effective, interface between people and computers—has remained largely neglected. Apart from some modest developments in software for desktop dictation in the 1990s, the only time most people have talked to their computers has been when cursing them.

All this is changing. Already, speech recognition is a not-uncommon feature at the call-centres of telephone companies, financial-service providers and airlines in the United States. In Japan and Europe, meanwhile, speech recognition is being adapted for use as a hands-free input device for motor cars.

Technologies such as automatic speech recognition (ASR), speaker verification and text-to-speech generators (see article) are catching on fast. They promise to deliver access to information and services anytime and anywhere that there is telephone. With more than 1 billion phones in the world and new subscribers being added to the global networks at double-digit rates, the enthusiasm is understandable. What is really driving the enthusiasm for the technology is not just that people are used to talking over telephones and so need little encouragement or training. They have also proved themselves willing to pay a premium for such services.

So why now rather than, say, five years ago? Until recently, the enabling technology was not cost-effective. It is only in the past year or so that computers capable of serious work have become small and cheap enough to fit into mobile phones and PDAs (personal digital assistants). Add the growing pervasiveness of broadband access to the Internet—especially in the form of wireless Ethernet in public places such as airports, hotels and coffee shops as well as offices—and the demand for instant information was bound to explode. That is making it all the more necessary for answers to be automated in some way. Also, do not forget that, while computers have become small enough to fit into shirt pockets or to be strapped around the wrist, people's hands and fingers have remained the same.

Without speech recognition, people are going to have a hard time coping with the demands that the information society is placing on them

In short, speech recognition has finally found strong reasons for existence. Without it, people are going to have a hard time coping with the demands that the information society is placing on them.

Softly, softly

Over the past couple of years, speech recognition has been creeping into the work place. It was not those large-vocabulary, speaker-trained, desktop dictation systems that spurred things along. Even when they worked, the technical complexity of such programs only gave speech recognition a bad name. Most organisations seeking to automate their call-centres are not particularly interested in such refinements as being able to distinguish between, say, “I scream” and “ice-cream”. If they are running an answering service for flight arrivals and departure times, they have a pretty good idea what words the customer will use. With more modest demands placed upon it, speech recognition should have far less trouble meeting expectations.

No surprise, then, that there was so much optimism at SpeechTek 2001 in New York in October. Although growth in the industry this year has been flat, analysts expect the market for speech-related technologies to expand tenfold over the next five years. Wishful thinking? Maybe. But remember that, in America alone, there are 80,000 call-centres, which among them spend more than $90 billion annually dealing with customers' requests. With human operators costing around $1 a minute to maintain, speech recognition offers companies an opportunity to lower their overheads.

But it is not only the reduction in costs that is attractive. What is also creating strong interest among telephone companies and financial-services firms is the way that ASR has been able to improve the quality and consistency of information services, and to eliminate telephone queuing in the process. As one delegate at SpeechTek remarked, ASR is saving the world from the “touch-tone hell” of the multi-layered, menu driven, voice-mail systems that can leave the caller in a blind alley or an endless loop.

Charles Schwab, an American discount stockbroker, introduced the first speech system for retail broking in 1996. That year, the number of new accounts with the company increased by 41%, and its call-centres took 97m calls. The new system was installed by a leading speech-recognition supplier, Nuance of Menlo Park, California. At Schwab, the automated attendant can understand 15,000 names of individual equities and funds; takes up to 100,000 calls a day; and is 93% accurate in identifying queries the first time they are made. Customers get immediate access to quotes and trading, even during busy periods. Costs have been cut from $4-5 per call to $1.

Opportunity knocks

Most ASR systems on the market today use a restricted form of speech recognition called “directed speech”, in which the automated agent first asks a question and the caller replies. Over the coming year, however, companies such as Nuance and SpeechWorks International hope to deploy systems that understand natural language as it is actually spoken. Apart from allowing callers to make a variety of requests in many different ways, natural-language systems can understand a caller's request even if specific words may never actually be spoken. In short, such systems seek to comprehend what actions callers want to initiate rather than simply the words they use. Last year, AT&T, America's leading long-distance telephone company, deployed a natural-language system in its customer-care centres; it has been using it to process more than 2m calls a month. So far, AT&T has no plans to sell its proprietary system commercially.

Not so IBM. The computer giant has implemented a natural-language system at T. Rowe Price, a fund manager, to handle inquiries about retirement plans. The system can respond to the thousands of different ways in which a request might be expressed, taking into account diverse phrasing, sentence structure and regional accents. It has reduced the amount of time customers spend on a call by a third.

Call-centres aside, a lot of companies are becoming keen on speech recognition because of its scope for voice-activated dialling. This allows customers to dial a firm's main switchboard number and say “Get me Jane Smith, please”. The ASR system would then find Jane Smith's number in an internal directory and dial it automatically. IBM has been using such a system internally for years to save money and make life easier for its 300,000 employees. More recently, the Bank of New York installed a voice-enabled directory system supplied by Phonetic Systems of Bedford, Massachusetts, to handle calls for its 16,000 employees.

Opportunities for telephone-based services using speech recognition do not stop there. Applications being actively pursued include self-service banking, automated weather and stockmarket reports, catalogue ordering, web navigation, e-mail collection and, most intriguing of all, virtual personal assistants (VPAs).

With a VPA account at the local telephone company, a parent could call and say “Remind me to pick up Emma from football practice at 5pm today” and then get a reminder call at the appropriate time. Common to all such services is a need for some form of speech recognition, as well as an engine that can generate speech from digitised text. For surfing the web over the telephone, software called a voice browser is required to allow callers to navigate and access data on web pages that have been adapted for voice recognition.

The ability to use voice to gain access to web-based services has been the main reason for much of the recent hype about so-called “voice portals”. The idea is to give telephone users a single point of entry to voice-based web services and information—in much the same way that Yahoo, say, does for computer users on the Internet. So far, voice portals have been set up to deliver personalised access to web-based information such as share portfolios, sports results, news headlines, film reviews, local weather, horoscopes and e-mail. Daniel Hawkins of Datamonitor, a market research company, believes that voice portals will help the mobile-phone business offer third-generation (3G) services without 3G's cost.

Over the next few years, it is in the motor car, not on the telephone, that speech recognition may make its biggest impact

Yet customers are not exactly beating a path to voice portals. Nor has anybody worked out how to turn the idea into a profitable business. Many analysts think that voice portals will find a more modest role for themselves on company-owned intranets. However, some of the larger telephone companies could always use voice portals to create value-added services that could generate revenue by encouraging subscribers to use extra minutes of call time.

Over the next few years, it is in the motor car, not on the telephone, that speech recognition may make its biggest impact. Car makers such as Fiat, Nissan, Toyota, General Motors and Ford are pressing ahead with work to turn the vehicle into a portal with its own Internet address. IBM now sees the car as an extension of the office, and is keen to help network it.

Even without new legislation to restrict the use of mobile phones in cars, the motor industry has long recognised that voice is the safest way for drivers to interact with the fiddly peripheral components built into the modern vehicle. Nissan is already selling a luxury model that uses voice instructions to control such things as audio, internal climate, navigation and lighting as well as the car phone. In its advertising, the company jokes that the voice system can even control the traffic.

Standards battle

Before then, however, several thorny issues have to be settled. If the grand vision of merging the past century's two great networks—the telephone and the Internet—is to be achieved, common standards are needed so that web pages can handle voice. Until recently, it appeared that the industry standard would be VoiceXML, a voice-aware version of the extensible mark-up language used for formatting web pages and defining their content for cataloguing purposes. On October 23rd the World Wide Web Consortium—a voluntary body that sets international standards for the web—released its first draft of version 2.0 of VoiceXML. A week earlier, six important members of the consortium (including Microsoft, Philips and Intel) created a new forum of their own for developing a rival standard for telephony-enabled access to the web called SALT (Speech Application Language Tags). Clearly, the scene is set for a battle royal over how the voice-enabled Internet is to work.

Will that derail attempts to rewire the Internet so that it can recognise speech? Not if Bruce Pollack is correct. As a consultant on speech-recognition services for West Corporation, the largest automated call-handler in North America, Mr Pollack believes that the standard used is totally irrelevant to the main customers of speech-driven applications. He points out that, two years ago, none of West's call-centre customers was interested in speech recognition. Today, however, as many as 50% of them want to know how to use the technology for saving money. Nobody asks about the standards behind the interface. Besides, the fact that a battle over standards is taking place is a healthy sign, says Mr Pollack. It means that innovation is under way.

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REPORTS

Learning the meaning

Dec 6th 2001
From The Economist print edition

TO GET a machine to recognise speech, the first thing you have to do is to capture and digitise the actual sound. This is then manipulated mathematically so as to reduce “noise” and other stray signals that have crept in. Next, the cleaned-up stream of digital sound is chopped into pieces. These are matched to words, or bits of words, using statistical algorithms that rely on knowledge of how language is spoken.

But it is not enough merely to recognise the words. If speech recognition is to be effective, the computer must literally understand those words and be able to use them in the right context. Therefore, before doing anything else, it has to “learn” the meaning of thousands of sentences. It does this by breaking down sample sentences into their grammatical components, and being told what each of those components means. So, when it has a component such as a word or bit of a word (eg, the “ziz” sound of the possessive “s”), it can retrieve the appropriate meaning.

The leading companies in this field include SpeechWorks International of Boston, Nuance of Menlo Park, Philips Speech Processing of Eindhoven, and Lucent Speech Solutions of Murray Hill.

The ability to generate realistic speech from text stored in a computer will be crucial if voice-enabled services are to take off. A firm that wanted to provide customers with a voice-enabled ordering system for its entire catalogue could easily find that the inventory was far too long, and changed too often, to be recorded by human actors. This is where tricks learned by AT&T, with its advanced text-to-speech technology called “Natural Voices”, come into play.

This works by first recording various dialogues read by a human, and then transcribing this information into sounds. The text and the sounds created are catalogued in a database. When queried by a new piece of text, the database retrieves the appropriate bits of speech and assembles them in the right order.

In technical fields, it is possible to create specialised databases that improve the accuracy of the spoken responses considerably. The speech that systems such as “Natural Voices” generate is exceptionally convincing. Engineers working in the field expect to be creating computer-generated speech that is indistinguishable from human speech within a year.

Researchers at AT&T are also working on so-called “voice fonts”—ie, different styles of voice and accents. This raises the interesting possibility of designing “voice brands” associated with specific companies. Alternatively, the voices of well-known personalities could be captured in a recording studio, and then used in games and cartoons, or to endorse products, with the person never having to step into a recording studio again. Another possibility is to capture and sell “voice-prints” of celebrities in much the same way as their photographs are marketed.

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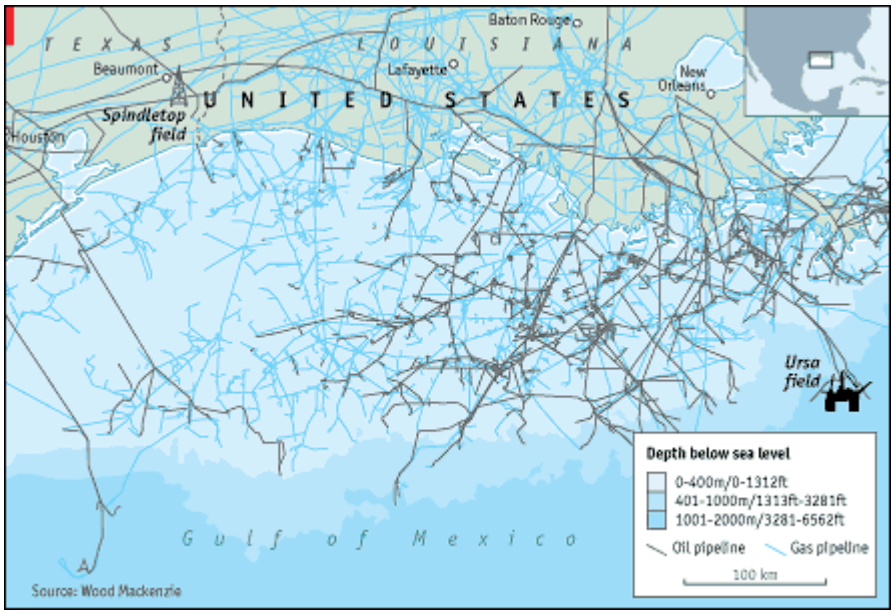
REPORTS

Into deeper water

Dec 6th 2001
From The Economist print edition

Oil exploitation: The world's apparently unquenchable thirst for oil is fuelling a boom in exotic kinds of exploration technology for use in much deeper waters

“FIVE to ten years ago, if you came to me with the idea of a directional well that stretched 25,000 feet...I'd have said you're dreaming. But today, we're just kicking them down one after the other.” So says Brian Kuehne, an oil driller at Royal Dutch/Shell. He and his colleagues from the drilling side of the business were gathered at the firm's regional office in New Orleans to brief *TQ* on the impact of recent technological advances on oil exploration and production (E&P).



Using fancy charts and slides, potted histories and personal anecdotes, the drillers claimed that astonishing breakthroughs were transforming their business. Sceptically, your correspondent headed to Shell's Ursa platform in the Gulf of Mexico to see for himself. The drillers were indeed wrong: their claims were far too modest.

This $1.5 billion platform is one of the most sophisticated in the world. For a start, its remarkable “tension-leg” design allows it to sit safely atop 3,800 feet of treacherous water—a depth thought unconquerable only a few years ago. The floating city of steel is so heavily instrumented that its control room looks like something out of “Star Trek”. Ursa pumps so much oil—115,000 barrels or so a day—that it has paid for itself in less than three years of operation.

And there is plenty more to come. On the day your correspondent was present, the crew drilled an elaborate multi-directional well that twisted and turned its way to a giant pocket of oil 28,000 feet away from the platform. Gone are the days of straddling an oil-field and drilling vertically down to get at it. “We drilled wells in the same way for 100 years,” says Raoul Restucci, boss of Shell's Exploration and Production Company. “But, in just the past few years, we've seen dramatic changes in technology that are greatly reducing the cost of accessing a molecule of oil.” Mr Restucci should know: his firm has produced two-thirds of all the deep-water oil ever pumped from the Gulf of Mexico.

The secret to Shell's success in such risky realms is technology—plus an attitude that ensures that the company profits from that technology. However, Shell is not alone in pushing E&P technology to the limit.

ExxonMobil, the other oil major investing seriously in such technological know-how, is also using ultra-deep-water platforms.

At ExxonMobil's laboratories in Houston, located up the road from Shell's own much-trumpeted research institute, teams of top researchers present a dazzling display of the sort of technology that supports the firm's $10 billion a year in upstream capital spending. The company has come up with “next generation” seismic-imaging techniques that allow reservoirs to be visualised on a screen in minutes rather than the months it would have taken a few years ago.

How? Clever software and advanced algorithms are part of the answer. But brute force has its place as well. Tucked behind a semi-circular screen of a virtual-reality amphitheatre at ExxonMobil's laboratory is over $80m-worth of high-end computing infrastructure, including supercomputers (known as the firm's “analytic brain”). Ask the resident researchers whether claims about the past few years of technological change are exaggerated, and the response is as swift as it is breathless: “We are on the cusp of dramatic technological breakthroughs in exploration and production.”

Why now? Part of the answer lies in the enormous promise of deep-water exploration—the oil industry's final frontier. It was the development of technologies such as advanced seismic imaging that encouraged firms to venture into such inhospitable (and, once, unpromising) terrain. In turn, the early and spectacular success of developments such as Ursa are driving further innovation.

The final frontier

With all the continents (save Antarctica) having been drilled to death over the past century, geologists believe that there are few “elephant” fields left to be discovered on land. Just about the only virgin territory left is under the sea.

Drilling under the sea is nothing new. For decades, the North Sea and inshore Gulf of Mexico have been big oil producers. Until recently, however, many geologists were convinced that offshore oil would be found only in shallow waters. The sorts of rock conducive to petroleum accumulation, they argued, would be found only in ancient river deltas and other formations close to shore.

Veterans of the oil industry recall that, only a few years ago, the notion of finding oil under thousands of feet of water was ridiculed. However, thanks to advances such as seismic imaging—plus some lucky strikes by a few intrepid deep-water pioneers—that view has been debunked. Oil majors are now betting that enormous amounts of oil are trapped under the ocean off Brazil, West Africa and the Gulf of Mexico.

On one recent day, the crew drilled an elaborate multi-directional well that twisted and turned its way to a giant pocket of oil 28,000 feet away

Flying from New Orleans to Ursa, the history of America's offshore exploration can be seen below like a busy and crowded scene from a Brueghel painting. The shallow waters teem with activity as oil rigs, supply vessels, drilling ships and the like go about their business. The skies are full of helicopters ferrying crews and visitors to and from the rigs. And hidden beneath the surface lies a lattice of pipelines that pump the oil and gas ashore (see map above).

Today, all of that activity peters out along a line where the underwater contour sinks to below 1,500 feet. But James Dupree, head of deep-water production in the Gulf of Mexico for BP, predicts that, in a decade's time, a similar map will show the infrastructure extending out to waters where the depth is more than 5,000 feet. But turning that vision into reality is going to be one of the biggest challenges the oil industry has ever faced.

That is because finding, drilling, producing and transporting hydrocarbons in ultra-deep water will be hideously expensive without several breakthroughs in E&P technology. Although the picture is unclear for the industry as a whole, the few companies with deep enough pockets are taking the long view, and see the billions required to develop such technologies as prudent—even necessary—investments. As Ken Miller, vice-president for technology at ExxonMobil Upstream Research Company, puts it, “this undoubtedly accelerates technology development, because we simply cannot afford to drill our way to knowledge at $30m-40m per deep-water test well.”

Bigger than elephants

Aside from the race to deep water, three other forces are now driving Big Oil's technological frenzy. The first is the need to squeeze more out of existing oil-fields. That makes sense, and not just because there are few elephants left to discover. A century after the industry's first gusher tapped Spindletop in Texas, discovering new oil-fields and trying to suck them dry remains more miss than hit.

From Spindletop in Texas to Ursa in the Gulf of Mexico

The average recovery rate for an oil-field remains a dismal 30-35%. In other words, of all the oil proven to exist in a given reservoir, companies typically get only about a third to market. So technology that raises the recovery rate by just 5% across a firm's portfolio would contribute much more to the bottom line than hunting for new elephant fields to exploit.

The key is not simply to cajole more oil from the oil-bearing rocks of a main reservoir, but also to tap smaller fields nearby that were previously uneconomic, by using such tools as multi-directional wells. Euan Baird, the boss of Schlumberger, an oil-services company, has his sights set even higher. He wants to develop techniques—particularly real-time monitoring of wells—that will lift recovery rates to 50% or 60% within a decade.

The second factor behind the oil industry's present scramble to embrace the new E&P technology is that oil reservoirs are self-depleting assets. Once a well is drilled, an unrelenting geological process is unleashed that depletes the reservoir even if none of the oil is pumped out. Not counting exploitation, today's mature fields are declining by an average of 7-8% per year. In Venezuela, the natural depletion is as high as 25%. The reasons for this vary from place to place, but have to do with the interplay between water, natural gas, sand and other forces “downhole”, over which man has little control.

In recent years, the oil industry has spent vast sums on such techniques as sand management, exotic cement coatings for wells and other techniques to slow the natural depletion process. But the problem can only get worse. For one thing, most of the world's oil-fields are ageing fast; for another, the technology that increases production levels today is likely to accelerate depletion rates tomorrow. This is the curse of the E&P business: firms have to run just to stand still.

The third force behind big oil's technological push is the world's insatiable appetite for hydrocarbon fuels. In its latest “World Energy Outlook”, the International Energy Agency (IEA) forecasts that global production of oil must rise from today's level of less than 80m barrels a day to around 115m barrels a day by 2020 if expected demand is to be met. Experts at the Houston office of McKinsey, a management consultancy, reckon that when such an incremental demand is added to the existing task of compensating for depletion, the result is equivalent to adding a whopping 65m barrels a day of oil production over the next two decades. If oil producers in non-OPEC countries are to meet that challenge, the IEA believes they must invest about $1 trillion (in today's money) upstream over the next decade—much of it on technology.

One of the few things that the industry's scientists agree on is that there will be no single “silver bullet” technology. More likely, there will be a flurry of advances in three broad areas, which, together, should add up to improved recovery rates and lower costs. Such improvements will come from better visualisation of reservoirs, better placement and drilling, and—crucially—better management once the wells are in production.

The desire for better visualisation of oil reservoirs is longstanding. During the early days after the

Spindletop discovery, oilmen turned to “doodle-buggers”—soothsayers who claimed to be able to detect oil underfoot using a forked stick. By the 1920s, the industry had started using a crude form of seismic analysis—setting off a stick of dynamite in a hole to detect unusual patterns in the waves reflected to the surface.

However, it was the arrival of 3D seismic imaging in the late 1980s and 1990s that transformed the industry. By helping to make sense of what is going on inside the rocks below the earth's surface, this has made the process of finding oil much less of a hit-and-miss affair. By McKinsey's reckoning, the net benefit to the global oil industry from 3D seismic imaging (through reduced drilling costs, additional reserves exploited and so on) amounts to $11 billion a year.

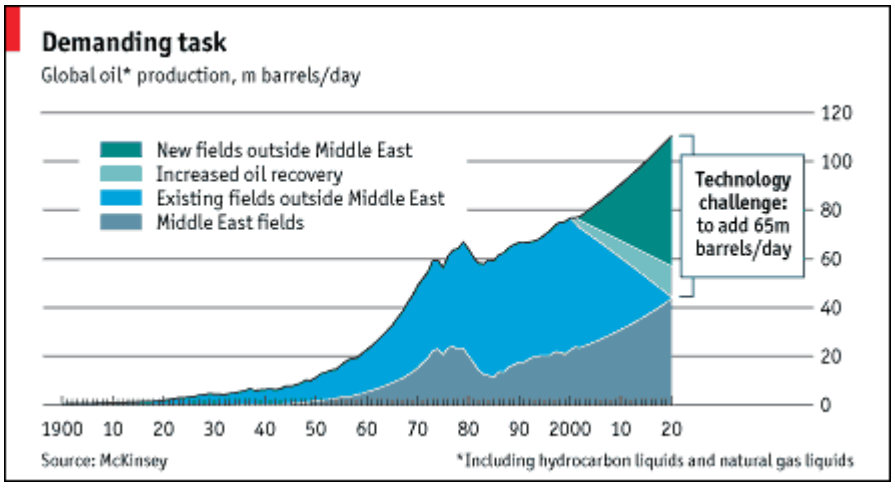
Thanks largely to technological advances, the average ‘finding and development' cost of oil has fallen to a third of the $20 a barrel it was

Still, there is plenty of room for improvement. Today's visualisation techniques, for example, are not particularly good at seeing through salt layers (such as those found under the deep waters of the Gulf of Mexico). A flurry of research initiatives to remedy such shortcomings is under way. One ExxonMobil researcher even claims that his firm is developing detection techniques that will accurately locate hydrocarbons with 100% certainty. How might this magic actually work? Unsurprisingly, the firm is not prepared to give an answer.

There is no question that accurate seismic data will lead to better placement and drilling of wells. Today's drillers are already using techniques that were unimaginable by roughnecks in the 1970s. On the Ursa platform, for example, the drillers that hit that pocket of oil 28,000 feet away did so without extreme effort and without risking having their fingers chopped off by whirling pipes. Nearly all the dangerous work is now mechanised, and the supervision is done not at the drill but in a comfortable control room that is well out of harm's way.

Things still do not go completely like clockwork, however. As Tommy Morrison, Shell's drilling supervisor on Ursa, admits, “You don't know you're going to hit oil till you actually hit it.” Yet even that could change in the future. Smarter drill bits that encase sensors capable of measuring conditions in the surrounding rock could act as the eyes and ears for the driller. By looking far enough ahead of the drill bit and communicating to the operator in real time, adjustments could be made so that the rig found oil every time. Other technologies in the works include improvements to multidirectional wells, and “slimhole” drilling.

But perhaps the most ambitious of all is better management of wells once they are in place. Here, the use of chemicals pumped down the well under high pressure could enhance the fracturing of low-permeability rocks—thereby increasing production. Installing compressors at the bottom of wells could help to stave off the decline in reservoir pressure over time, and so boost oil and gas recovery.



Another idea is “downhole processing”. Instead of coming up with oil, firms often end up producing gas or even water. Techniques for separating oil, gas and water using equipment embedded in the well itself, or installed on the sea floor, could prove a dramatic improvement. If combined with new techniques for re-injecting unwanted water or gas back into the reservoir, this approach could prove to be a far cheaper and more productive way of extracting oil.

Further off are wells that will, in effect, run themselves—calling for help only when things go wrong.

Schlumberger is developing wells that are equipped with elaborate electronic sensors and function rather like computer servers, with their own data networks and Internet addresses. Mr Baird draws inspiration from the medical world: “Today we manage oil wells as if the patient had to die before treatment, since wells cannot describe their symptoms to us. In future, real-time monitoring of wells will help alert us so that we can rescue the patient—or at least delay his demise.”

Putting the wells online

The Schlumberger boss goes further. He predicts that the oil-exploration business will become increasingly like the IT (information technology) business. Roger Anderson of Columbia University, New York, is confident that “the wired, virtual oil patch will allow instant access to field monitoring of all the company's operations and visualisation using a laptop from anywhere in the world.”

But as wells become more and more instrumented, the oil industry risks being flooded with data. From Ursa alone, Shell is bombarded with 30,000 data points every day. Over the next few years, one of the main challenges facing the oil industry will be to develop the internal systems to control—and exploit—this flood of information. In the riskier, bluewater projects, the pay-off from virtual oil wells could be especially handsome, if history is any guide. Thanks largely to technological advances, the average “finding and development” cost of oil has fallen to a third of the $20 a barrel it was two decades ago. Meanwhile, the average “lifting” cost has fallen by half, to less than $4 a barrel.

Such improvements may be only the beginning. Dr Anderson is now advising the oil industry on how it can learn from the experience of the motor and aerospace industries in embracing IT. The wholesale rethinking of their back office and shop-floor habits using the latest IT practices has helped companies such as General Motors and Boeing achieve unprecedented reductions in cost and cycle-time. By Dr Anderson's reckoning, IT could help the oil industry to slash its deep-water exploitation costs by as much as 50% and cut delivery time in half. Add the much greater pay-off possible in deep water (each of the various wells on platforms like Ursa are ten times bigger than typical onshore wells) and one gets a glimpse of the new economics that E&P technology could deliver.

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CASE STUDY

The art of the quantum leap

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Magnetic storage: The innovation of the "giant magneto-resistive" head—the breakthrough that boosted the capacity of hard-drives from a few gigabytes to 100 gigabytes and more—came from chance observation, basic research and a vast, painstaking search for the right materials. This case history points to the need for companies to build close ties between their research laboratories and product development divisions

THEY are often taken for granted: but the magnetic materials that are the basis of computer technology have a long and intriguing history. In ancient times, the Chinese and Greeks were well aware of the attractive power of lodestone. Italian seafarers used the mineral's insistence on pointing north for navigation in the 14th century. But it was not until the beginning of the 17th century that an English physician named William Gilbert showed that the earth itself was one giant magnet.

Navigation aside, the commercial exploitation of magnetism really began only in the 19th century. The starting-point was the observation by Lord Kelvin of how the electrical properties of a piece of iron change when it is placed in a magnetic field. The effect, called magneto-resistance, derives from the way the magnetic field interacts with atoms in the metal, causing them to change their orientation. Today, magneto-resistance is used widely in magnetic sensors and in read-heads for hard-drives in computers. It is probably fair to say that magneto-resistance may have done more than any other branch of physics to make the information society a reality (see this animated illustration from IBM).

But if that was all that had happened, the computer industry would have run out of data-storage space long before now. Fortunately, a new magneto-resistance phenomenon was discovered a decade or so ago. Independently of one another, two groups of physicists—one led by Albert Fert in France and the other by Peter Grünberg in Germany—noticed that, when they exposed thin layers of magnetic materials to a magnetic field, they observed a much larger effect than anything they had previously seen. The result was so dramatic that the phenomenon quickly became known as "giant magneto-resistance" (GMR).

The physicists' motivation was pure scientific curiosity. One of the first people to recognise the potential of GMR to boost the storage capacity of computer hard-drives was Stuart Parkin of IBM's Almaden Research Centre in San Jose, California. What followed was a remarkable quantum leap in storage capacity. Computer hard-drives suddenly jumped from a few paltry gigabytes to tens and now hundreds of gigabytes, making it possible for even laptops to store as much information as the Library of Congress.

Without question, the GMR head therefore ranks as one of the most significant innovations the computer industry has witnessed. However, important as it has been to the computer industry, how the innovation was executed is a model for technology-based businesses everywhere. Here, then, is a case history—the first of a series—of how GMR changed the face of data storage.

Reading, writing and arithmetic

Data on personal computers are stored on a hard-drive's platter in the form of the orientation of tiny magnetised domains, which constitute units of information storage called "bits" (binary digits). A sensor known as a read-write-head skims across the surface of the spinning platter on a cushion of air less than a thousandth of an inch thick. As it does so, the head uses an electrical current from the computer, which is flipping rapidly on and off in a pattern representing a stream of digital 1s and 0s, to alter the polarity of the magnetic domains on the surface of the disk below. If the electrical signal is on, then the bit of data that is formed in this way is a 1; if it is off, the bit is a 0. To read the information back, the head simply reverses the process.

The first hard-drive was introduced by IBM in 1956. It was the size of a refrigerator and it literally weighed a ton. Altogether, it used 50 platters measuring 24 inches in diameter to store five megabytes. The first significant improvement was IBM's invention of the “thin-film induction” head. The breakthrough here was the use of a single element to read and write data from and to the disk. In its writing mode, an electrical current sent through a coil induced a magnetic field within the head that was projected on to the spinning disk. In its reading mode, magnetic fields from the boundaries between neighbouring bits on the disk induced small currents in the head's coil.

Ingenious as it was, the concept was not easy to scale up. As hard-drives grew in storage capacity, the magnetic domains had to be made smaller so as to accommodate more of them on a platter. That meant that the currents which the bits induced got weaker, like voices fading in a crowd. If the trend had continued, heads would have been able to write bits smaller than they could read—thereby putting an upper limit on the capacity of hard-drives.

All that changed in 1991 when IBM introduced the first “anisotropic magnetoresistive” (AMR) read-heads for hard-drives. The invention was the outcome of a challenge that IBM had set for itself to achieve a storage density of one gigabit per square inch on a hard-drive platter. Rather than use conventional heads that measured the magnetic field from the bits directly, the trick was to use heads that changed their resistance in response to the orientation of the bits on the platter. That resulted in a head which, in read mode, was more sensitive to the weaker signals from the smaller bits.

Thanks to AMR heads, hard-drive manufacturers were able to increase storage densities by around 60% a year during the 1990s. But even that solution was not forever. The resistance changes that AMR heads relied on were only a few percent at a time. In the end, such changes could not keep up with the pace of miniaturisation as customers demanded ever higher-density hard-drives.

Serendipity at work

In the spring of 1988, Dr Parkin left his San Jose laboratory for a scientific meeting in France. There, he heard Dr Fert report unexpectedly large resistance changes in his magnetic multi-layer structures of as much as 50%. But there was a catch. The multi-layers took time and care to make. That meant spending a lot of money. Worse, the GMR effect required temperatures close to absolute zero (-273°C) and magnetic fields at least 1,000 times stronger than the earth's—hardly the conditions for making hard-drives.

Dr Parkin had already been experimenting with ways of boosting storage density using a “cheap and fast” technique called sputtering. This is an indirect way of coating a surface by blasting a material in a container and using the splashes to cover the object—rather like firing pellets into a bucket of paint and letting the splashes paint the ceiling.

At the time, it was widely believed that sputtering would not work with the highly structured materials used in the GMR studies. Fortunately, Dr Parkin chose to ignore the consensus view. He sputter-coated sandwiches of magnetic layers only a few atoms thick, separated by “spacer” layers of non-magnetic metals. On measuring them, he found they were producing very large changes in resistance, even in his earliest samples.

The GMR head required an innovative application of innovative science to make a device that overcame the limits of an existing technology.

Encouraged, Dr Parkin and his colleagues created new materials that served as a so-called “spin-valve”—named for the way magnetic spin (see below) turns resistance on and off. The advantage of a spin-valve sensor is that a very small magnetic field causes a relatively large change in the sensor's resistance. Such a change can be anything from ten to 100 times that of the original AMR sensors. To everybody's delight, Dr Parkin's new spin-valve materials not only produced the GMR effect, but did so at room temperature and with magnetic fields as low as those used in hard-drives. They had just struck gold.

But before they could start minting it, they needed to find which combination of materials to use. With the theoretical predictions proving wrong, the IBM team set about examining elements drawn from practically the whole of the periodic table. All told, the group made and tested no fewer than 30,000 multi-layer combinations of elements.

Here, serendipity entered the picture for a second time. Because such a wide range of materials was

sampled, Dr Parkin's group had a unique database of the effects of various combinations of materials for careful study. In doing so, the team made an absolutely crucial discovery. They found that varying the thickness of the spacer layer actually affected the behaviour of the magnetic layers. In short, success would come not simply from selecting the right combination of materials; how they were assembled would be even more important.

Getting the dimensions right for the multi-layered GMR head then became a matter of understanding exactly what was going on at a quantum level within the materials. In essence, the spin-valve structure of a GMR head has three very thin layers: a “pinned” layer of magnetic material that is kept in a fixed magnetic orientation; a non-magnetic spacer layer; and a second magnetic layer that changes magnetic orientation as the disk rotates beneath it (see illustration above).

GMR exploits a quantum property of electrons called spin. This is an effect that causes electrons to act like microscopic bar magnets oriented in either of two directions, described as up or down. When a GMR structure encounters the magnetic field of a bit of information on a rotating hard-drive, the polarity of the sensor layer aligns with that of the nearby fixed-spin layer in a parallel or anti-parallel (ie, in line but pointing the opposite way) fashion.

This alignment enhances the change in resistance to an electric current passing through the sensor. That is because an electric current flows more freely when two magnetic layers are oriented in the same direction than when they are at an angle or directly opposed to one another. It is the change in current flow, measured by the hard-drive's electronics, that represents the data being read from or written to the rotating disk. By understanding the roles that the three layers played, the IBM group was all set to start juggling the thicknesses and materials of the multi-layered structure.

By the end of 1997, IBM was ready to introduce its revolutionary GMR hard-drive. Since then, the rest of the hard-drive industry has scrambled to catch up. In the process, storage densities have soared from the 1 to 2 gigabits per square inch of the first GMR hard-drives to more than 27 gigabits per square inch today. The present record holder, a pocket-sized 120 gigabyte hard-drive from Western Digital, can store the equivalent of a stack of double-spaced typewritten pages taller than an 18-storey building.

Chance and the prepared mind

Innovations invariably proceed in fits and starts. The invention of the GMR head required an innovative application of innovative science to make a device that overcame the limits of an existing technology. The IBM researchers had to study the basics of solid-state physics and find ways to apply what they had learned to new insights that colleagues at Almaden had gained from scrutinising advanced concepts of magnetic storage.

The theory, though essential, was not enough. Creating these multi-layered structures demanded a painstaking process of trial and error. Greasing the wheels in all this was a supportive milieu that resulted from a close association between IBM's research and product divisions. In the end, recalls Dr Parkin, the amazing thing was that it was possible to build a structure, atomic layer by atomic layer, with properties that do not exist in nature, and to create something that could actually be manufactured at a price that consumers could afford.

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REPORTS

The heart of the matter

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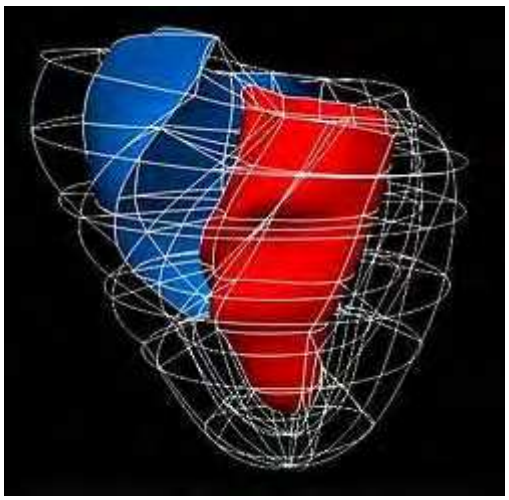
In silico biology: Better tools, and more data, mean that creating virtual organs by computer is no longer a pipe-dream. To see how this will help researchers and drug-makers, read on or click here for an enhanced version showing organ models in action*

ALTHOUGH he is a mild-mannered academic, Peter Hunter is quick to reveal his heart. It pulses and surges for all to see. Give it a shock and watch it race; disturb its balance and see it beat wildly out of control. And like some men, Dr Hunter, who works at the University of Auckland in New Zealand, has an unerring ability to switch his heart on and off at will.

But Dr Hunter carries this heart on a laptop, not his sleeve. It is an astonishingly life-like representation of the ventricles—the pump room—of a human heart, from the fine net of blood vessels that surround the organ to the specific proteins of individual cells within it. This "virtual" organ is the work of the Cardiome Project, a consortium of bioengineers, physiologists and computer scientists who are knitting together the complex anatomy, mechanics and electro-physiology of the heart into an interactive model.



Start with a framework . . .

Unlike video or animation, the on-screen organ is not simply a picture of a heart. In essence, it is a heart whose intricate structure and function has been translated into thousands of mathematical equations and millions of datapoints that are programmed into a computer and run as simulations. As such, it is a spectacular example of *in silico* biology, an emerging discipline that brings computing power to bear on a wide range of biological problems—from analysing genomes to recreating neural networks.

Computer modelling may be standard practice in, say, designing an aircraft or studying planetary motion, but it is only now taking off in physiology. Simple descriptive models—the heart as a pump, or the lungs as bellows—have been used by biologists for centuries. More sophisticated quantitative models describing, for example, the movement of molecules across a cell membrane—in terms of mathematical equations based on fundamental laws of physics—have also been employed for decades.

But there is only so much insight, and so many hypotheses, to be gleaned from simple models. Over the past quarter of a century, molecular biology has begun to reveal the amazing complexity of molecules and biochemical interactions within cells, tissues and organs. And yet what has been revealed so far is a mere trickle of information compared with the deluge that will flow from work on the human genome. Making sense of this information, and understanding how the various pieces interact to produce such complicated biological activities as heartbeats, requires more complex ways of thinking about physiology than can be done on the back of an envelope. Hence the promise of "computational physiology".

Model behaviour

Creating computer models of even single cells, let alone whole organs, is a tricky business. While other complex phenomena, such as climate modelling, pose similar challenges of collecting millions of bits of data and converting them into mathematical models, physiology also brings the problem of scale. Biological entities range in size from single proteins one-billionth of a metre long to bones the length of one's thigh. Biological processes, such as enzymatic reactions, can flash by in milliseconds or, in the case of a heart attack, take place over hours. Fitting this range of events into a single model stretches computing power to the limit.

Dr Hunter's virtual heart forms part of a larger initiative, called the Physiome Project, launched four years ago by James Bassingthwaighte of the University of Washington in Seattle. The grand plan comprises two parts. One is to catalogue physiological information, from previously published research and continuing experiments, into digital databases. The other is to organise this information into a hierarchy of quantitative models that will integrate the activity of one organ—from genes up to whole collections of tissues—to another.

Forget all thoughts of science fiction: the Physiome Project is not an attempt to recreate a “virtual human” on computer. A complete model of everything in the body would not be a model at all, but rather a clone of the real thing. That would leave researchers back where they had started—in need of models of individual organs to help them understand how they work. Nor is the Physiome Project intended to replace messy experiments. What it will be is a tool to help researchers refine their ideas before even reaching for a test-tube, and to improve their understanding of the result afterwards.

Combine and conquer

The virtual heart is a union of form and function on a computer screen. Its gross shape was determined by analysing thousands of wafer-thin slices of a dog's heart. These measurements were then digitised and fed into a computer. The three-dimensional arrangement of the cells and muscles within each slice was determined by microscopy, and that information added to the geometric data in the computer. Also included in the model was a sequence of mathematical equations to represent the physical properties of the tissues involved—defining such things as how the heart tissue behaves when stressed.

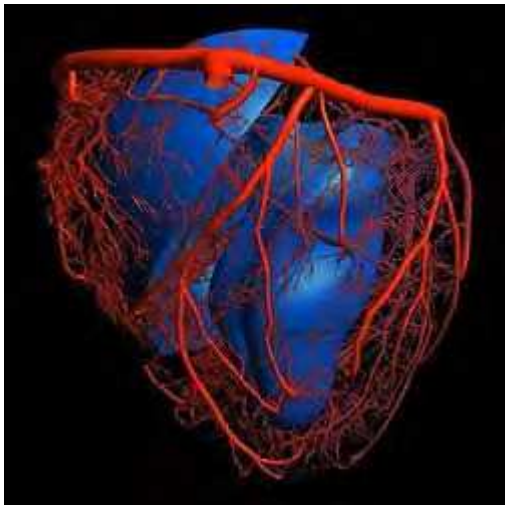
All this information was tied together in a program called CMISS, developed by researchers at the University of Auckland to create a structural framework of the heart. On to this framework, Dr Hunter's team was then free to attach “functional components” that represent mathematically many of the activities within the heart—for example, ion channels opening and closing during a surge of electrical current through the heart. The result is a visual simulation that looks and behaves much like the real heart it mimics.

This was a mammoth task, but many of the mathematical tools, modelling tricks and analytical instruments used to create the virtual heart can be used on other organs. Indeed, the Auckland group, with Denis Noble at Oxford University and researchers at the University of Bordeaux, have started modelling the lung. Already, they have created an anatomical model of its branching airways, which includes a representation of how oxygen is exchanged for carbon dioxide.

Computer modelling may be standard practice in designing an aircraft or studying planetary motion, but it is only now taking off in physiology

Modelling how lungs work is even more complicated than simulating the heart, because lungs also depend on the activity of adjacent structures, such as muscles and ribs. Still, models of these are also in the works. Dr Hunter's team has scanned all the bones of the body by laser and created anatomical models of them on a computer. Meanwhile, making models of muscles—which draw on the MRI (magnetic resonance imaging) methods used in hospitals—is also under way.

Yet another organ model under the Physiome Project's umbrella is the micro-vasculature—the vast network of tiny blood vessels that penetrate deep into almost all the nooks and crannies of the body. Aleksander Popel and his colleagues at Johns Hopkins University in Baltimore are building a model of the micro-vasculature to get a better understanding of how molecules and cells interact in these narrow channels where physical experiments are hard to perform. Although it is still early days, attempts are even being made to model the pancreas, bladder and kidney.



. . . clothe it in a mesh of blood vessels

As well as the whole organ modelling under way, other groups are focusing on single cells and trying to mimic their myriad processes using computers. Bernhard Palsson of the University of California at San Diego, who is also head of a local start-up firm called Genomatica, is using a different mathematical technique called “constraint-based” modelling to re-create hundreds of metabolic reactions within *Escherichia coli*, a common bacterium found in the

gut. Dr Palsson and his colleagues at Genomatica are now applying the same modelling methods to other micro-organisms, including human pathogens and micro-organisms used in industrial processes.

At Keio University in Tokyo, Masaru Tomita heads an entire institute devoted to *in silico* biology. To date, he has created computational models of the metabolism of a single-celled bug called *Mycobacterium genitalium* as well as human red-blood cells. Another promising cell project is the Alliance for Cellular Signalling, recently launched by America's National Institutes of Health. Its goal is to map the complex network of signalling reactions which cells use as an internal messaging system, and then feed this information into other computational models.

The Physiome Project has some signalling problems of its own. Few of the physiological models and their associated databases can communicate with one another. That is because they tend to be written in different programming languages. Fortunately, help is at hand. A new version of XML (the extensible mark-up language used to define the actual content as well as the layout of web pages) has been developed by Dr Hunter's group with Physiome Sciences, a company based in Princeton, New Jersey.

The new language, CellML, offers a standard way of representing, and exchanging, the wealth of information contained in a variety of organ and cell models. This means that users who are interested in a particular function or part of an organ can import this information from another model over the web, and incorporate it into their own models using their own programming language. In return, the information that they generate from their experiments and include in their models can also be encoded in CellML and similarly used by modellers elsewhere.

Show me the money

Computational physiology is more than an academic exercise; it excites commercial interest in many quarters. One obvious beneficiary is the information technology industry. Already, IBM has staked its claim in the biological sciences, forging links with companies working in genomics and proteomics. To reinforce its position, IBM has now moved into computational physiology, licensing know-how from Physiome Sciences to help it integrate information from gene to organ. Along with Compaq and Sun Microsystems, IBM has joined an industry consortium that is seeking to speed the development of CellML.

Another firm with an interest in computer modelling is LifeFX of Newton, Massachusetts. It produces “stand-ins”—life-like images of human faces that represent the user over the Internet in, say, reading an e-mail message aloud to an acquaintance, delivering company information or making sales pitches for online retailers. Although a number of other companies have also developed online avatars, LifeFX gets its version from Dr Hunter's laboratory, where many of the same modelling techniques are used in the virtual heart.

The Auckland group has described the complexity of the human face using “finite-element” techniques borrowed from engineering to build a mathematical mesh, over which skin texture and other features are rendered. The model is given life by incorporating data gleaned from analysing videos of a real face doing such things as moving its lips to pronounce specific sounds. This digital model is translated into software which, when downloaded to a user's computer, simulates a face in action.

Medical-device makers, too, have been quick to see the benefits of computational physiology. In orthopaedics, for example, the musculo-skeletal models developed by Dr Hunter's group could be used not only by surgeons planning precisely where to make their cuts, but also by prosthetics makers seeking to tailor their devices to suit a patient's specific needs. Tweaking the bone-and-muscle models to take account of, say, an individual's knee shape or bone density would allow braces to be made that support the leg just where the stresses were critical. America's Food and Drug Administration (FDA) now requires physiological simulations of all implantable devices before they can be released on to the market.

Pharmaceutical firms are also looking to computational physiology for ways to improve the design and development of new drugs. Companies need to make hard choices about which of the millions of compounds and targets they should pursue. Picking the wrong ones brings heavy opportunity costs.

Novartis, Aventis and several other firms are testing cellular simulations to see how useful they might prove in developing promising drug candidates, or for rescuing molecules that may have fallen by the wayside in earlier attempts. Entelos, an *in silico* biology company based in Menlo Park, California, has an

Though a mammoth task, many of the mathematical tools, modelling tricks and instruments used

asthma model which helped one drug firm to redirect its research from drugs acting on one type of inflammatory cell to another. Physiome Sciences' model of blood coagulation showed yet another drug firm why flooding the body with one clotting factor would actually have the unexpected effect of blocking coagulation rather than speeding it up.

for the virtual heart can be used on other organs

Pharmaceutical firms are more sceptical about how useful whole organ models will prove. The developers of such models hope that they might one day be used routinely to assess drug safety and efficacy before firms move into the expensive and lengthy business of clinical trials. The pharmaceutical industry certainly needs new ways of forecasting adverse drug reactions. In recent years, a number of potential blockbusters have failed to meet regulatory requirements, or have been pulled from pharmacy shelves, because of unexpected side-effects.

In fact, the virtual heart has already been put to practical use. Three years ago, it helped Roche to gain approval from the FDA for its calcium channel blocker. It demonstrated that the drug was not causing a particular sort of unusual behaviour (even though the medicine, Posicor, was later withdrawn because of kidney complications). But because computer models are, by definition, stripped-down versions of reality, Paul Herrling, head of research at Novartis, reckons they will have limited use in revealing side-effects compared with conventional animal testing, unless they become as complex and unwieldy as the real thing.

Portrait of a few thousand equations and a million data points

Although some models may have a clearer commercial future than others, they all have a role to play in gaining a better understanding of the body's intricate ways. Unlike the Human Genome Project, which had a defined goal—a complete DNA sequence—the Physiome Project will always be a work in progress. The more that researchers use the models, the more experimental data there will be to feed back into them, and the better they will become, attracting still more researchers to experiment with them. But, as Dr Noble notes, many biologists are frankly intimidated by the complex mathematics in computational physiology. The crucial step of creating tools that allow physiologists to model biological functions without having to grapple with equations and computer code is already in the works.

One such tool being developed by Physiome Sciences and Leslie Loew's group at the University of Connecticut at Farmington allows biologists to create models of how cells function by simply selecting from a menu of pre-defined biochemical pathways and specific locations inside the cell. Do you want to know how changing the level of calcium at the cell surface might influence a signalling pathway that is known to be involved in Alzheimer's disease? Just click and drag.

Modelling that friendly depends on engineers, physicists and physiologists who can handle mathematics with ease. Such people are in short supply. Both the National Institutes of Health in America and the Medical Research Council in Britain have launched recruiting drives to train students who can bridge the gap between mathematics and physiology. Although many who have crossed that divide complain that a shortage of computing power and good biological data are the main stumbling-blocks, for the time being brains, rather than bytes, will determine how far computational physiology can really go.

* Virtual health warning: Computer organs are not for the technologically faint-hearted. A new plug-in will be supplied, but downloads may take time.

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REPORTS: COMMUNICATIONS

Mightier than the pen?

Dec 6th 2001
From The Economist print edition

Data input: With 5,000 years of continuous development and billions of satisfied customers to its credit, the pen may not seem like a product in need of radical improvement. Yet plans are afoot to overhaul the humble writing instrument completely

WHO would have thought that the pen could stand—let alone need—any further innovation? In its long history, it has evolved from a sharpened stick scraping cuneiform on tablets of Sumerian clay to become, in turn, a quill, a metal-tipped implement, a ball-point and a felt-nib. What is there possibly left for it to evolve into? Well, many believe that the pen is a reactionary holdout in the information age—and needs to be networked if it is to serve any useful purpose in today's interconnected world.

“Apart from our voices, the pen is the most common communications technology we have—and it is the only one that is not digital,” explains Christer Fahraeus, chief executive of Anoto in Lund, Sweden. “There are billions of people who use it every day, and they learn how to use it from a very early age.”

Anoto is one of several companies planning to launch wireless pens that convert the written word from ink on paper to digits that can be transmitted by a mobile phone or stored in a personal computer. Such technological upheaval is ambitious for a product that many consumers might regard as not broken and therefore in no need of being fixed.

Over the past 5,000 years, the evolution of the pen has taken a remarkably leisurely pace. From sharpened sticks to modern gel-ink pens, the most significant innovations in the development of the pen have been the addition of ink and the refinement of the nib. Along the way, writers have been liberated from the ink-well by the invention of the on-board reservoir, while the ubiquitous ball-point has pushed aside the capillary-action nib.

Despite its apparent simplicity, the pen could claim to be the most significant technology ever developed. In his book “Things That Make Us Smart”, Don Norman, a psychologist and computer scientist at the University of California in San Diego, argues that, without the invention of the pen, mankind would have found it impossible to develop mathematics, science and commerce. By committing their thoughts to clay, parchment and then paper, human beings were able to extend the capacity of their brains and to create a collective consciousness from which all could benefit.

Today, that collective consciousness manifests itself as the hard-disk, the mobile phone, the web and the corporate intranet. Anoto's Mr Fahraeus and his rivals believe that turning the pen into a wireless digital device will reduce the effort of storing and sharing people's thoughts.

Plugging in the page

Getting the words from paper to the network is no trivial matter. First, the digital pen has to sense what is being written, convert it from a graphical form into text, and then beam it to a nearby device for storage or transmission.

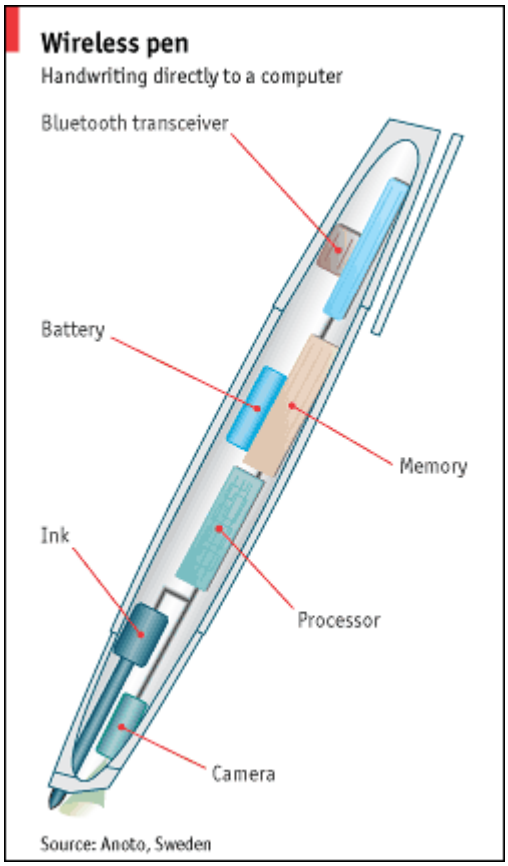
Three different approaches have emerged in different parts of the world. In Sweden, Anoto's pen uses

special paper with a pattern of dots that is scanned by a tiny camera in order to see where the pen is going. In America, Digital Ink of Wellesley, Massachusetts, is developing its N-Scribe pen using an on-board infra-red transmitter and triangulation technology designed to be embedded in common devices such as mobile phones and personal digital assistants. Meanwhile, OTM Technologies of Herzliya in Israel is working on a standalone system that shines laser beams on to the writing surface and analyses how movements of the pen affect the reflected wavelengths.

All three approaches will squeeze the electronics into something that looks and feels as much as possible like a conventional ink pen. But early versions are likely to be slightly fatter than the average writing instrument—a fact that inky-fingered scribes may find off-putting.

Anoto's heritage is in image-scanning. The company is a division of C-Technologies, an electronics firm listed on the Swedish stockmarket, which developed the C-Pen—a device that scans text from print and transfers it to a computer. The Anoto pen is equipped with a camera that looks at the tip of the pen—not at the ink, but at a pattern of almost invisible dots, 0.1mm across, that are printed on special paper. With 36 dots to a 2mm square, Anoto's developers have found a way to offset each dot slightly from its neighbours, so that each square on the paper is geometrically unique.

The implications of such a uniquely addressable surface means that a jotting pad imprinted with the Anoto pattern can have one area for making notes, another for ticking a box that says “Send this note as e-mail”, or still another saying “Send this note as a fax”. The system is being designed so that a Bluetooth wireless chip in the pen will transmit the information to a nearby base station or personal computer for processing, storage or transmission over the Internet. Above all, says the company, getting the information off the page has to be seamless and to create as little incremental effort as possible for the user. Otherwise, people may applaud the digital pen's novelty but find it just too fiddly to bother with.



Anoto plans to license its technology to partners such as Ericsson, the Swedish telephone-equipment maker, which is developing a product of its own called the Chatpen. Anoto is said to have signed agreements with five of the world's six largest pen manufacturers. One of them, A.T. Cross of Lincoln, Rhode Island, is working closely with Anoto to bring its own version to market. John Ruggieri, Cross's head of pen computing, believes that the trick will be to have applications that are so compelling that consumers will be happy to use the digital pen.

Such applications could include companies licensing segments of the Anoto pattern to use in their print advertising. “You spend far more time looking at print advertisements than you do at banner ads,” notes Mr Fahraeus. He predicts that, one day, consumers will look at adverts in newspapers and magazines and tick Anoto-patterned boxes on them that say “Buy this” or “Send more information”.

Anoto has also forged alliances with paper and stationery companies, including Filofax and Mead Corporation, two makers of pocket organisers and desk planners. Each day in a diary or calendar will carry a different paper pattern, so that an Anoto pen and its associated software can process the scheduling and reminders electronically.

John Hayek of Mead believes that consumers are becoming interested in “co-usage” of paper and digital technologies rather than going fully digital and organising their lives on a PDA (personal digital assistant) such as a Palm or an iPaq. “There's a great portability and immediacy to paper that's behaviourally easier for consumers,” he observes. “What's driving the trend towards co-usage is the fact that many offices are using products such as Lotus Notes and Microsoft Outlook that allow scheduling.”

Many believe the pen is a reactionary holdout and needs to be networked if it is to serve any useful purpose in today's interconnected world

With no need for special paper, Anoto's rivals should have an easier time getting their products into the

hands of users. But they do not have an “intelligent map” to sell to potential partners. Ticking a box on an advertisement using Digital Ink's N-Scribe or OTM's V-Pen technology merely produces a digitised tick rather than a message that says “Buy this item and send it to the owner of pen 1774589, whose address and credit-card details you can obtain from the Anoto commerce server”.

Beaming in

Digital Ink's approach is to embed its triangulation technology into mobile phones and PDAs so that they can determine what somebody using one of its pens is writing on a conventional notepad nearby. N-Scribe uses infra-red to transmit movements from the pen to its accompanying device, which then processes the information into a sequence of vectors, if it is a diagram, or uses handwriting software to turn it into text. Like Anoto, future versions may use Bluetooth or other wireless technologies.

Mark Rubin of Digital Ink believes that the N-Scribe pen should find a ready market in countries where the language does not work easily with standard computer keyboards. “Writing with a device like this, you can take it home and write 50 pages of *kanji* [Japanese characters] and then upload it to your office computer through a mobile phone,” says Mr Rubin.

Meanwhile, OTM Technologies hopes to use its V-Pen tracking technology to form the basis of a series of products made by partners rather than itself. The company's chief executive, Gilad Lederer, says the technology—called “optical translation measurement”—is based on a classic Michelson interferometer developed in the 1880s to detect the mysterious “universal ether” that scientists then believed to be the carrier of light waves. With a minute interferometer placed close to its writing tip, the V-Pen is sensitive enough to analyse the Doppler shifts (ie, changes caused by movement) in the wavelengths of light reflected from the writing surface as the pen sweeps across. These frequency shifts betray the movement of the nib as it scratches its way across a surface (even the back of a hand), allowing the pen's software to recognise the letters being formed and turn them into a stream of digital information.

In many ways, the V-Pen is not so much a digital writing instrument as a general input device. “What we feel people need is not just handwriting input, but a replacement for the keyboard and mouse that is totally portable—and combines the navigational control of the mouse with the ability to enter text.”

Like his rivals, Mr Lederer believes that the new generation of wireless digital pens will overcome the scepticism engendered by dismal earlier attempts to capture writing digitally. “It might take ten years,” says Mr Lederer, “but speech and handwriting are the most natural ways for people to interact.”

Speech, yes; but the future of handwriting is more questionable. With children now learning to use computers before they even tackle handwriting, there is a danger that the pen might become an unnatural way to create text. There is also a risk that, in their rush to perfect the technology, digital-pen pushers may misunderstand why people use pen and paper in the first place.

In his musings on human-computer interactions, Professor Norman points out what every newspaper reporter and college student has long appreciated—that it is the act of taking notes that counts, not the notes themselves. “It focuses the mind, minimises the tendency to daydream, and forces the person to reflect upon the events being recorded so intensely that, at the conclusion of the event, the notes themselves can usually be discarded.” Whether digital pens will help people do that better or worse is something that has yet to be judged. But it will surely be an interesting experience finding out.

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REPORTS

Designer plastics

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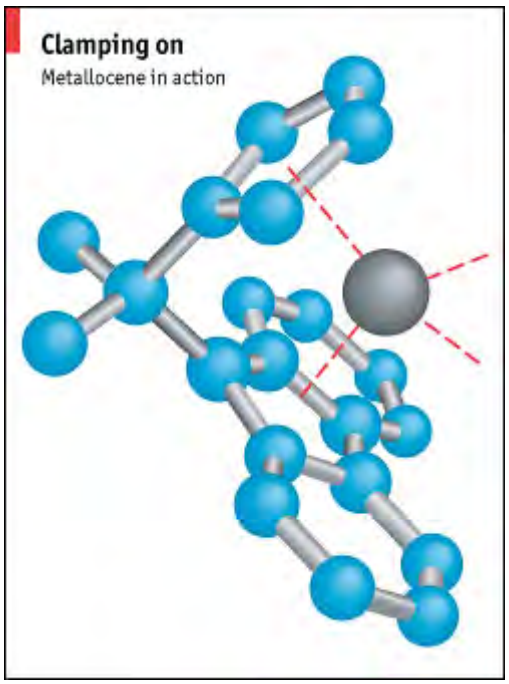
From The Economist print edition

Catalysts: After years of development, a new breed of catalysts called metallocenes is shaking up the plastics business, rapidly penetrating commodity markets and promising a new age of cheap designer plastics. Are they the revolution proponents claim?



"I WANT to say one thing to you, just one word. Are you listening? Plastics." To this day, the advice young, bewildered Ben Braddock received in the 1967 classic film, "The Graduate", lives on as a reminder of the mundaneness of the plastics business, with all its dreary smokestacks and organic compounds. More than 30 years on, however, the plastics business is proving anything but boring for chemical concerns facing an entire step-change in technology.

Thanks to a new breed of catalysts called metallocenes, the plastics business is facing one of its most significant periods of innovation in decades, ushering in an age of custom-made commodity plastics with high-tech properties befitting the information age. At stake, say such metallocene proponents as Dow Chemical and ExxonMobil, is nothing less than the future of the plastics business.

Following years of development, pilot trials and marketing, metallocene technology is finally reaching critical mass, accounting for more than 1m tonnes of plastics sold last year. That, say industry watchers, is a critical milestone that underscores a growing acceptance of the technology. With years of lawsuits and intellectual-property battles behind them, plastics companies have begun licensing the technology en masse, with plans to begin producing metallocene-based plastics on an even larger scale.

Just as semiconductors turned analogue signals into digital information, metallocenes promise to turn plastics into more definable materials. And much as biotechnology promises drugs with pinpoint accuracy, the catalysts promise plastics that can be designed to engineers' exacting needs. "There's literally a whole new industry growing out of this," emphasises John Ewen, a pioneer of metallocene technology and an industry consultant.

Few materials can match the versatility and economy of modern polyethylene and polypropylene. These are by far the largest-selling plastics. Whether in bottles, plastic films or medical products, the two polymers (collectively known as polyolefins) have proved themselves as workhorse materials since the 1960s. So compelling are their key properties—low cost, high strength and versatility—that they have come to account for almost half the $60 billion in plastics sold in America every year.

For all that, polyolefins still leave much to be desired. The average plastic is a mixture of polymer chains and structures whose properties are hard to predict and demand many compromises in their use. Designers and engineers typically factor in these uncertainties by making their products thicker, larger and less intricate, or by using special additives to change the properties at great expense.

A new alchemy

At the heart of the problem are the catalysts that have been the linchpin of the plastics business. For the past 50 years, one of the foundations of polyolefins manufacture has been a unique set of catalysts called

Ziegler-Natta catalysts, named after their inventors Karl Ziegler and Giulio Natta, who first unearthed their effect in 1953 and won the Nobel prize for it in 1963. Dr Ziegler and Dr Natta noticed that specific kinds of metals, such as titanium and vanadium, can attack the double bonds between atoms of carbon in ethylene and propylene to allow the carbon atoms to bond with neighbouring molecules and form chains of polyethylene and polypropylene.

The catalysts encourage formation of long chains of polyolefins quickly and easily: polyethylene with a flexible structure of zig-zagging carbon studded by hydrogen; and polypropylene with a more rigid structure of regularly spaced groups of carbon atoms with three hydrogen atoms. A different process, developed by Phillips Petroleum in 1951 using chromium catalysts, is also employed to produce polyethylene.

Yet Ziegler-Natta catalysts also make it hard to produce a pure plastic. Their lattice-structure creates many different reactive sites that can synthesise different types and weights of polymer chains in a given process, yielding plastic with large traces of detrital polymers, ranging from sticky, low-molecular-weight compounds to brittle, high-molecular-weight polyethylene and polypropylene. Equally difficult is the process of modifying the properties of the plastic—an arduous and expensive effort that requires additional reaction steps and the use of expensive additives. Raising the strength of the plastic can add as much as 40% to its cost.

Metallocenes promise to fix all that, and to deliver new properties to boot. The catalysts act rather like tiny molecular robots to let chemists control the alignment and structure of polymer chains. In the process, they create chains with a specified length and more predictable physical properties. And, just as important, they promise to do all that in a single reaction, cutting the cost of producing high-performance plastics.

By definition, metallocenes are tiny particles of positively charged metal ions sandwiched between two rings of carbon atoms that have five atoms apiece. They are the most developed subset of the single-site catalysts category. In the 1980s, breakthroughs in physical chemistry and catalysis attracted chemists to metallocenes, which have one single active site per catalyst particle, each identical from one particle to another.

Ironically, though the catalysts themselves were discovered in 1953, they were dismissed for decades as impractical chemical phenomena because of their low activity. Then, in 1976, two German researchers, Walter Kaminsky and Hansberg Sinn, demonstrated that the addition of controlled amounts of water could make metallocenes far more reactive. Four years later, the two scientists piqued chemists' interest further, demonstrating that in the presence of certain chemicals such as methylaluminoxane (MAO), they exhibit remarkably high activity for producing polyolefins.

That turned metallocenes from science fiction into high-tech reality. Today, the combination of metallocenes and MAO or trimethyl aluminium co-catalysts produces a potent mixture that permits much greater throughput under lower temperatures and pressure than even Ziegler-Natta catalysts permitted.

Plastics companies have begun licensing the technology en masse, with plans to begin producing metallocene-based plastics on a larger scale

Clamshell with a pearl

The real power of metallocenes, however, is their shape—typically a hinged clamshell with a pearl of titanium, zirconium, or hafnium at its centre (see illustration). By varying the shape of the clamshell and changing the type of metal used, chemists can control how the monomers react. The pearl of metal creates a single active site, ensuring that only one type of polymer is produced in the reaction. The clamshell helps to guide incoming monomers to react only when pointed in a specific direction, producing polymers of the appropriate shape. It can also be opened wider or narrower to control the chains produced.

The products are polyolefins with more definable properties. Narrowing the distribution of polymers yields higher tensile and puncture strength, and improves sealing in packaging films. By some measures, films made of metallocene-based polyethylenes can have two to three times the tensile strength, five times the impact strength, and twice the tear strength of a traditional polymer. That allows users to make much thinner films and parts, saving on everything from plastic resin to transport costs.

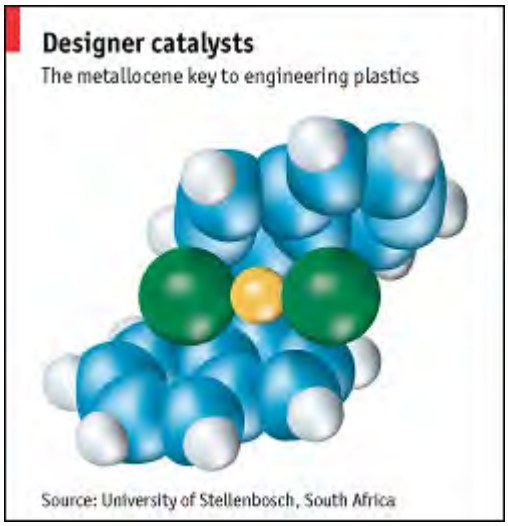
The narrow distribution of polymers also yields a very clear plastic. Union Chemical Laboratories, a division of the Industrial Technology Research Institute in Taipei, for example, is using metallocenes to develop a new class of plastic for cheap, high-quality Digital Video Discs (DVDs). According to some reports, the plastic's unique thermal resistance and low dielectric constant may make it suitable for flat-panel displays, printed-circuit boards and perhaps even as a silicon replacement in fibre-optic devices.

Meanwhile, the ability to produce lower density polymers creates softer, more elastic films that can “breathe” oxygen for packaging fruit and vegetables. Traditional food packaging is perforated with tiny holes to allow the food to breath and store longer, all at a cost in strength and overall expense. Metallocene-based packaging can be tailored to breathe at a specific rate to match the respiration of the food it is storing, with increased strength to boot. Notably, too, the narrow distribution of polymer and the low residual catalyst content in metallocene-based polyethylene means that the plastics give off little flavour or scent to the food they store.

Polypropylene, the more rigid cousin of polyethylene, is an even more fertile field for metallocene improvements. Managing the alignment of polypropylene's molecular chains provides stiffer plastics that can withstand much higher temperatures, while cutting out several steps in the processing of the plastic. Such polypropylene tends to exhibit good chemical resistance to hydrocarbons, alcohols and oxidising agents; a high balance between stiffness and impact strength; and lower melting-points than similar polymers. All of which adds up to faster process times and reduced wear on the production machinery.

One of the more compelling applications of metallocenes is their ability to combine previously incompatible co-monomers into unique new products. For example, Dow Chemical's “interpolymers”, produced by the polymerisation of ethylene and styrene—a reaction once thought uneconomical—are said to yield a unique mix of (to use the chemical industry's argot) “flexibility, processability and formability”.

And just as handy is the ability of single-site catalysts to add so-called polar and functional groups, such as fluorine and acrylic, into the molecular backbone of polyolefins to impart specific physical properties. That, says John Murphy of the Catalyst Group, an industrial consultancy based in Spring House, Pennsylvania, will allow plastics makers to dial in properties and launch plastics that perform in ways never thought possible before.



The mere potential of that was enough to set off an explosion in research and development during the 1980s by the likes of Dow Chemical, Exxon, Fina, Mitsui and others, all seeking the ultimate prize in plastics—a cheap, highly engineered resin. By some estimates, more than $4 billion was spent researching and developing the single-site catalysts and processes for both polyethylene and polypropylene. A stream of polymers began to roll out of plastics plants, beginning with Exxon's introduction of metallocene-based polyethylene in 1991, followed by Dow in 1992 and by numerous others later in the decade.

Revolution's slow development

As revolutions go, however, that of metallocenes has been slow in developing. Although the technology was welldeveloped by the end of the 1980s and commercialised early in the 1990s, the market for metallocene plastics has remained largely one for speciality and high-value applications. More important, perhaps, licensees for the technology have been slow to come forward.

To be sure, the use of metallocene polymers has grown at a 25-30% clip in recent years. In total, the market amounted to about 1.1m tonnes of polyethylene and nearly 115,000 tonnes of polypropylene in 2000, says the Catalyst Group. These are piddling amounts compared with the gargantuan volumes of traditional polyolefins sold. All told, metallocenes amount to little more than 1% of the total market—hardly a revolution. What is more, the bulk of that growth has come from cannibalising the existing polyethylenes and additives markets. Still, metallocene producers see countless new applications ahead that will boost demand—such as replacing glass, specialty polyesters and even polyvinyl chloride, the other major plastic.

A number of hurdles must be cleared first, however. In the first place,

metallocenes are fraught with processing problems that make it hard to use them in existing equipment. It turns out that the narrow polymer distribution they produce makes extrusion and processing more complicated. Clear metallocene-made films tend to crackle on the surface, making it hard to produce a smooth film. And all sorts of modifications to plastics machinery are required to account for their varied properties.

Metallocene-based packaging can be tailored to breathe at a rate to match the respiration of the food it is storing, with increased strength to boot

Metallocene producers say they have taken great strides towards licking such problems. Ironically, one of the solutions has been to add specific co-polymers into the mix to give the effect of Ziegler-Natta distributions, but in a more controlled way. Other efforts seek to tweak the processes to make switching from Ziegler-Natta to metallocene as easy as swapping one for the other.

Yet using metallocenes has also been expensive, not because of the cost of the catalysts themselves, but because of the expense of the co-catalysts needed to activate them. As Max McDaniel, a senior scientist at Chevron Phillips sees it, the cost of MAO and other co-catalysts used has kept metallocene plastics out of reach for most commodity plastics users. But thanks to new production methods and falling prices of co-catalysts, metallocenes have become more commercial.

A patent affair

All the technical issues associated with metallocenes are minor compared with the intellectual-property battles that have ravaged the business over the past decade. With all the billions spent on research and development, some 3,000 individual patents have been issued for various processes and designs. Most of these have been locked up by Dow, which developed its Insite metallocenes for solution-based polyethylene production, and by Exxon, which commercialised metallocenes for a gas-phase polyethylene process.

As chemical companies sought to consolidate control over intellectual property, they set off a wave of lawsuits that has mired the industry in the courtrooms for close on a decade. More than ten big patent lawsuits were filed between Dow, Exxon, Mobil, Phillips and others in the 1990s, and a number are still in the courts today. With millions being spent on litigation, it is little wonder that plastics makers have been reluctant to license one metallocene technology rather than another.

It is no small irony that many of the suits were finally resolved in merger. Exxon and Mobil merged in 1999 to form ExxonMobil and absorbed a judgment against Mobil in the process. Meanwhile, Dow Chemical acquired Union Carbide, becoming part-owner of Univation, the metallocenes licensing joint-venture between Exxon and Union Carbide. (Dow agreed to transfer its patents for gas-phase metallocene, developed with BP, to the British oil company to meet regulatory demands.) And suddenly, after years of cut-throat competition, Exxon and Dow had become partners. As one Dow executive put it, “One day you're focused on killing them, the next you're trying to figure out if they're your friends.”

In only five years, the Catalyst Group's Mr Murphy points out, ten leading polyolefin producers have disappeared. In the process, all their intellectual property has been gathered under a few roofs. That may have concentrated control of metallocenes technology in the hands of a coterie of giants, but it also offers licensees an entire portfolio of technologies from which to choose.

Over the past year, with the lawsuits behind them, patent libraries well rounded and the cost of using metallocenes coming down, metallocenes have come to the fore—with licensing deals and market acceptance reinforcing the future of the technology. Countless plastics makers facing slower demand and market turmoil have turned their sights on the high-tech catalysts.

Univation, which licenses Exxon's EXXPOL technology and Union Carbide's UNIPOL process, has seen a brisk business re-licensing the technologies to new firms. Meanwhile, companies such as Chevron Phillips and NOVA Chemicals have commercialised their own proprietary, single-site catalyst technologies and intend to make them available for licence. Countless others are following suit, as customers start inquiring about metallocene technology.

The result is expected to be a marked increase in the adoption of metallocene and single-site catalyst technologies. According to the Catalyst Group, metallocene-made polyethylenes will devour market share in the low-density polyethylene (LDPE) market, which may account for some 22% of total polyethylene demand by 2010. That may seem a far cry from taking over the market (most metallocene producers

now concede they will never completely dominate it), but it underscores the value that will be added to the commodity markets.

Coming full circle

Interestingly, the rapid growth of metallocenes has spurred the development of new, even more advanced Ziegler-Natta catalysts and alternative organo-metallic catalysts that approach the properties of metallocene plastics with fewer hassles. DuPont, for example, is commercialising its Versipol line of single-site catalysts based on nickel. Others are working to produce Ziegler-Natta catalysts with fewer active sites in order to perform more like metallocenes.

One question looms, however. At what point will all the new catalyst technology be simple overkill? While metallocenes and the other new technologies yield important new properties, customers may not actually need all of them. Metallocene-made rubbish bags, for example, have proved unsuccessful, say some producers, because they are so thin that customers perceive them as being weaker than normal ones, even though they are really much stronger.

Indeed, some question whether the final market for metallocenes will be large enough to pay back the $4 billion or more invested so far in the technology. With so many producers diving into the market and hoping to compete on an equal footing, plastics makers may be making the same mistakes as the Internet's dotcoms did not so long ago—too many companies, with similar products, chasing too few customers. Perhaps by then, the Ben Braddocks of the world may see the plastics business in a different light.

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LAST WORD

Grassroots innovator

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Richard Jefferson wants to change the face of agriculture, by putting innovation back into the hands of farmers

Agriculture's meta-technologist

CATCH him on a good day and Richard Jefferson will play you some bluegrass on his guitar. He keeps a large collection of antique instruments, and often travels to conferences with a laptop in one hand and a mandolin in the other.

Yet get him to talk about his professional interest, agricultural biotechnology, and Dr Jefferson's tune becomes more sombre. He points to the 780m people in the developing world who are suffering from malnutrition—a large proportion of them farmers who cannot grow, or sell, enough to make ends meet. Science will not solve their problems, says Dr Jefferson. But biotech could help them to improve their lot. The biotech he has in mind, however, is not the sort that agribusiness has perfected—the “Round-up Ready” soybeans or “Bt” maize (corn) that have been genetically engineered with Iowa in mind, not sub-Saharan Africa.

Fifteen years spent consulting on agricultural projects for the World Bank, the UN's Food and Agriculture Organisation and the Rockefeller Foundation have convinced him that the technology needed to boost agriculture in the poorest parts of the world has to emerge from the ground up. In short, from those in the field who know the limits of the land and local culture, and not in far-flung laboratories with one-size-fits-all solutions.

But this sort of grassroots innovation—traditionally done by public-sector researchers working closely with local farmers—is dwindling. It is a fact of life that the tools of biotechnology do not come cheap. It is also undeniably true that, ever since the “green revolution” of the 1960s, governments everywhere have been pruning back agricultural research as well as official development aid—as if hunger had been conquered.

Meanwhile, companies in the rich industrial world have been pouring money into biotechnology, and now account for at least a third of all agricultural research, says Philip Pardey of the International Food Policy Research Institute. This shift in balance between public and private sectors in agricultural research means that commercial interests, rather than food-security needs, are driving the agenda. Much like pharmaceutical companies, agricultural firms are more interested in the concerns of rich than poor countries. Nothing wrong with that: biotech firms are not charities. But it does mean that there are imbalances which global institutions need to address.

One such imbalance is the way intellectual-property rights are distributed between rich and poor. As companies and universities in America, Europe and Japan scramble to stake their legal claims to all the most promising genes, techniques and plant varieties, a tangled web of patents, cross-licences and material transfer agreements is making life difficult for those who want to help. A case in point is so-called “golden” (ie, vitamin A-enhanced) rice, which has been held up in the laboratory while dozens of different patents have had to be dealt with to allow its release.

Minstrel of apomixis

Breaking down barriers

One way forward, Dr Jefferson believes, is to adopt a more catalytic approach to innovation. What is needed, he muses, are some “meta-technologies” that overcome the technical, capital and intellectual-property barriers in agricultural research and allow others to do the innovating. He likens this decentralisation of agricultural innovation to the way that the Linux operating system, which was created by a global band of dedicated experts and donated free to the world, has become a pillar of e-commerce and a serious alternative to the pricey wares of Microsoft, Sun and IBM. The new meta-technologies envisaged by Dr Jefferson would offer a genuine alternative to agri-business and the network of agricultural research centres (called CGIAR) sponsored in part by the World Bank.

Although they carry out much good work, Dr Jefferson fears that these institutions have become locked into an established way of doing things. Dr Jefferson's answer is to bring biotechnology closer to the land. Let local plant breeders and growers develop the foods they think best. To this end, Dr Jefferson founded the Centre for the Application of Molecular Biology to International Agriculture in Canberra, Australia, nearly a decade ago.

This not-for-profit centre, called CAMBIA for short, has some 40 researchers drawn from around the world. At the centre's core, and the basis of Dr Jefferson's own expertise, is a set of cutting-edge techniques for agricultural biotech. He made his name in the 1980s with the invention of GUS, a tool that makes it easier to track the changes made while tinkering with the genetic make-up of plants. He was also the first in the world to plant genetically modified crops in an open field.

Apomixis technology could save cassava and potato growers as much as $3.2 billion a year

Today, CAMBIA has half a dozen technologies on the boil. One of its most ambitious is called “transgenomics”. Instead of using the conventional approach of shooting “foreign” genes into a plant, transgenomics takes advantage of the genetic diversity that is already within the plant itself. Through this genetic sleight of hand, CAMBIA has created more than 5,000 strains of rice which have the capacity to turn on genes in different ways than normal—in, say, a root rather than a leaf, or at an earlier time. These “activating” strains can then be crossed with normal plants of interest to breeders. In turn, the breeders can look for novel traits which crop up in these plants' offspring. Tests are under way at Wuhan University in China. If it works in rice, the technology could be extended to a variety of crops.

While it is early days in transgenomics, CAMBIA's project on patents has reached fruition. With a grant from the Rockefeller Foundation, the centre has spent two years building a searchable web-based database (www.cambiaip.org) that contains more than 257,000 agriculture-related patents from America, Europe and the international Patent Co-operation Treaty system. The aim was to create a simple means of letting ordinary users tap the wealth of technical and commercial information contained in a vast library of patent documents that would otherwise be far too costly and tricky to access. The searchable website, launched in August, is already getting hundreds of “hits” a day from users around the world.

Immaculate conception

Another project that Dr Jefferson has on the boil is an international consortium that he is setting up to develop apomixis—“seeds without sex”. He is convinced that apomixis will transform agriculture,

particularly in poorer parts of the world. Some plant species, such as wheat, reproduce through seeds created by the union of male and female sex cells when pollen from one plant drifts on to the flower of another. Other species, such as bananas, opt for asexual reproduction, sending out biochemical signals to transform bits of themselves into new plants. But a few curious crops—plants related to pearl millet, for instance—can, in effect, clone themselves, by producing seed without the need for pollination.

To Dr Jefferson and his colleagues, this immaculate conception is more than a botanical curiosity. Today, millions of people in sub-Saharan Africa rely on cassava, a starchy root, as their main meal. Cassava propagates asexually, which means that viruses or fungi present in the parent tissue will carry into the offspring. However, if cassava could be made to reproduce through seed, as in apomixis, this infectious legacy might be left behind. According to the Boston Consulting Group, apomixis technology could save cassava and potato growers as much as $3.2 billion a year.

Apomixis might also offer a quick and easy means of mass-producing hybrid seed. Hybrid cereals, created through selective breeding of elite species, often have higher yields and more desirable features than their common-or-garden relatives. But this genetic superiority is lost within a generation if the hybrids reproduce sexually through seed.

That means that farmers cannot simply save grain from one harvest to plant the next season, but have to buy fresh hybrid seeds. By generating seed which is essentially a carbon copy of the original hybrid, apomixis overcomes this problem of genetic dilution. Even such firms as Pioneer which earn their living from selling hybrid seeds are interested in apomixis. Producing hybrid seeds is a costly business; apomixis could cut those costs by more than a third.

Formidable hurdles lie ahead. Some of the genes that play a part in apomixis have been identified. But that is a far cry from working out the full complement of molecules and mechanisms involved. And while few patents have so far been awarded on the genes and processes involved in apomixis, that could change.

Three years ago, Dr Jefferson led a group of experts in signing the “Bellagio Declaration”, which pledged to keep apomixis free of intellectual-property restrictions. Nobody developing apomixis technology wants a repeat of the messy “Terminator” affair of the late 1990s. Then, non-governmental organisations came to blows with Monsanto over patents on a genetic system which, activists claimed, could prevent farmers from saving and planting seeds year after year.

Dr Jefferson believes the capacity for apomixis lies dormant in most plants. And, like transgenomics, it is not so much a question of giving crops entirely new components through genetic engineering, but rather a matter of stimulating the plants to use the genetic resources that are already in them.

Much the same could be said of the universities, agricultural research stations, biotech firms and seed companies that Dr Jefferson wants to mobilise to turn apomixis into a practical technology. The scientific, commercial and regulatory expertise needed for what many have called the “Manhattan Project” of farming already exists. The problem is getting the varied interests to pull together in a coherent way—just as the Linux “open source” fans did—and make the product accessible to all.

To its credit, CAMBIA has resisted the lure of exclusive licences and shareholder investment, because it wants its work to be freely available and widely used. As Dr Jefferson points out, “It takes a lot of money to be dumb and survive, but you don't need much money to be smart.”

That said, understanding—and exploiting—apomixis is going to take a lot more than seed funds. So Dr Jefferson is doing the rounds of leading philanthropic organisations. He wants to raise $100m-200m for a ten-year campaign to get apomixis out of the test-tube and on to the dinner table. Getting this show on the road will be his toughest act yet.

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Wal-Mart

Wal around the world

Dec 6th 2001 | BENTONVILLE, ARKANSAS
From The Economist print edition

The world's largest retailer still thinks of itself as a small-town outfit. That may be its greatest strength

Get article background

THERE is no shortage of statistics describing Wal-Mart's size. With $216 billion in sales, it has bypassed General Electric to become the world's second-largest company after ExxonMobil. With 1.2m staff, it is the biggest private-sector employer in the world. It broadcasts more live television than any network. The computer controlling its logistics is the world's most powerful after the Pentagon's. Six years ago it sold almost no food, yet today it is America's biggest grocery retailer.

To appreciate fully how big Wal-Mart is, however, you have to travel to its headquarters in tiny Bentonville, Arkansas, a state where chickens outnumber people. A building the size of 24 football fields, carrying a giant Wal-Mart logo, looms out of the barren landscape. Yet this massive warehouse also offers a clue that size is not the main reason for Wal-Mart's success. Under the logo, in equally large letters, it says: “Our people make the difference.”

Despite its size, the world's largest retailer has stuck to its small-town roots. Its founder, Sam Walton, set up shop in a hamlet near Bentonville in 1962 because retailers such as Kmart and Sears dominated large towns. That decision shaped Wal-Mart's success. “Being founded in Bentonville was a coup,” argues Richard Church, an analyst at Salomon Smith Barney. Lacking customers, staff and suppliers, Walton had to do things differently. He offered incentives: profit-sharing for the staff, partnerships for suppliers. And customers got friendly service and “everyday low prices”, which meant that Wal-Mart had to keep costs minimal.

Frugality came naturally to Walton, who was a country boy. He made executives sleep eight to a room on trips. Once America's richest man, he drove an old pick-up truck and flew economy class. “Every time Wal-Mart spends one dollar foolishly,” he wrote, “it comes out of our customers' pockets.” A decade after his death, this is still ingrained in Wal-Mart's culture.

Employees are told to bring back pens from conferences

Thus, although its soaring market capitalisation—now $252 billion—has made millionaires of executives and hourly workers alike, there are no signs of opulence or ego at the company's austere headquarters. Lee Scott, the chief executive, drives a VW Beetle and as recently as August shared a hotel room to save money. John Menzer, head of Wal-Mart International, sits in a tiny office on the same floor as his staff. Executives take out their own rubbish, pay for their coffee and are told to bring back pens from conferences.

The company's small-town values drive its relationship with staff and suppliers. Despite its enormous workforce, there is a paternal feel to Wal-Mart. It is as if everybody were still working for some strict,

though ultimately benign, uncle. Employees are called “associates”. Most own shares and are on profit-share.

They also enjoy a large degree of autonomy. Ken Schroader, store manager at Wal-Mart's Supercenter in Siloam Springs, Arkansas, proudly demonstrates the scanners that tell his department managers precisely how well products are selling—sales compared with last year, mark-ups, how much is in stock or in transit. Such details allow a department head to become a small shopkeeper, running his section like an independent store and moving stock faster (Wal-Mart shifts inventory twice as fast as the industry average). Every humble store worker has the power to lower the price on any Wal-Mart product if he spots it cheaper elsewhere.

That sort of delegation is apparent outside the stores too. Michael Duke, head of logistics, uses his 6,000 truck drivers (most of whom own Wal-Mart shares) to keep tabs on inventory problems at stores. Involvement breeds loyalty: driver turnover is only 5% a year, compared with an industry average of 125%. George Tracy, head of personnel at a Bentonville distribution centre, cracks down on whatever raises costs and rewards whatever lowers them.

This month, for instance, Laura Blumenstein, one of his workers, will get dinner for two and a parking spot near the entrance (this is Wal-Mart, after all) for logging inventory fast and accurately. To raise flagging spirits, weird stunts—such as pig-kissing contests and quasi-evangelical weekend get-togethers—are laid on (see article). In America, at least, this works.

Suppliers are treated as part of the family, once they have proved their worth. Nervous newcomers are shown to “the row”, a long corridor of drab rooms, each adorned with a notice explaining that Wal-Mart's buyers do not accept bribes. It is like a scene from a bazaar: sweaters spill out of suitcases and haggling over prices continues all day. Angel Burgos, from Puerto Rico, wants to sell computers to Wal-Mart: “We were grapes,” he sighs, “but now we are raisins. They suck you dry.”

Proven suppliers, though, feel differently. Through Wal-Mart's proprietary systems, they are given full and free access to real-time data on how their products are selling, store by store. By sharing information that other retailers jealously guard, Wal-Mart allows suppliers to plan production runs earlier and so offer better prices. Procter & Gamble's $6 billion-a-year business with Wal-Mart is so important that the maker of Crest toothpaste has a 150-strong Bentonville office dedicated to it. Andy Jett, a director there, says Europe's retailers are still blind to the competitive edge that partnering with suppliers gives Wal-Mart. “Wal-Mart treats suppliers as an extension of its company. All retailers will eventually work this way,” he predicts.

No other global retailer comes close when measured by sales

All this effort has produced sparkling results. In less than four decades, Wal-Mart has come to account for 60% of America's retail sales and 7-8% of total consumer spending (excluding cars and white goods). Its same-store sales growth is running at five times the industry average and its pre-tax profits have grown by 15% a year over the past decade, to $9.3 billion in 2000. No other global retailer comes close when measured by sales. Mr Scott says future growth will come from aggressive new store openings, plus a move into food and into such services as banking (though Wal-Mart's foray into Internet retailing has not been entirely successful). “Is there some reason we couldn't be three times this size?” he asks. However, analysts worry about saturation in America and expect domestic profit growth to slow to 9% within five years—not bad for a normal company, but disappointing for the supercharged Wal-Mart.

Wall Street is pinning its hopes instead on Wal-Mart's overseas efforts. Founded only a decade ago, the international division already accounts for 17% of sales and 11% of profits. Mr Menzer says that the operation will contribute a third of Wal-Mart's profits growth within five years. Linda Kristiansen, an analyst at UBS Warburg, an investment bank, forecasts that profits outside America will grow by 21% a year on average until 2006. CSFB, another bank, puts the figure at 26%.

Are these predictions too bold? Wal-Mart is already the biggest retailer in Canada and Mexico. It bought itself the number three position in Britain with its £6.7 billion ($11 billion) acquisition of Asda in 1999, and it is now pushing into China. But its ventures in Argentina, Indonesia and Germany have been flops, accompanied by heavy losses. With a presence in nine countries, Wal-Mart is in fact less international than other aspiring global retailers such as France's Carrefour, which has stores in 31 countries.

Most of Wal-Mart's overseas problems were avoidable. In the 1990s it made the mistake of exporting its culture wholesale, rather than adapting to local markets. When it moved into Indonesia, it shipped in an

entire warehouse on a barge. In Germany, its biggest headache, Wal-Mart was ready neither for the entrenched position of such discounters as Aldi, nor for the inflexibility of suppliers and the strength of trade unions. It had little feel for German shoppers, who care more about price than having their bags packed, or German staff, who hid in the toilets to escape the morning Wal-Mart cheer.

“We screwed up in Germany,” admits Mr Menzer. “Our biggest mistake was putting our name up before we had the service and low prices. People were disappointed.” Mr Scott is blunter, blaming the cock-up on “incompetent management”. Just as well that Wal-Mart can afford such mistakes. “Who else can lose $300m a year in Germany and barely notice?” asks CSFB's Michael Exstein.

Wal-Mart is at least learning from its experience. Unlike its small, nervous steps into some foreign markets, the acquisition of Asda was bold, providing crucial expertise in selling food. Wal-Mart is also becoming more culturally astute, even importing good ideas from overseas into its domestic business. And things are looking up in Germany. Employees like being asked what they think and shoppers, used to surly staff and dingy stores, are slowly warming to service with a smile.

But Wal-Mart's biggest problem is its lack of “human capital”, says Coleman Peterson, head of personnel. The group has been at pains to replace expatriates with locals, and every overseas country team except China's is now led by a non-American. Yet it is expanding faster than it can train people internally, and has lost high-quality local managers to rivals.

Wal-Mart's biggest problem is its lack of “human capital”

This leads to another problem: that the international division still lacks scale. To exploit savings from sourcing globally, Wal-Mart needs to make more acquisitions. Buying Carrefour would be the boldest move. However, Wal-Mart is more likely to buy the hypermarket businesses of Germany's Metro, worth $4 billion. The two sides talked last year, and insiders say that Metro, controlled by three families, is ready to sell. Buying even part of Metro, which controls a third of Germany's retail space, would bring Wal-Mart huge clout with European suppliers, and also some more experienced European managers.

But Wal-Mart has another problem: its image. In America, its giant stores are symbols of “big retail”, blamed for the destruction of entire communities. To avoid future growth being constrained by political barriers, Wal-Mart may have to raise its head from Bentonville and worry more about how it is perceived. Unpopularity is hard for Wal-Mart executives to understand. After all, everyday low prices have been good for consumers. And a recent study by McKinsey, a consultancy, credited efficiencies in retailing (mainly Wal-Mart's) for more of America's recent productivity spurt than technology investment.

Ultimately, few doubt that Wal-Mart has both the patience and the resources to stay on top. “Never underestimate them,” advises Richard Hyman of Verdict, a consultancy. “They foster an image as country hicks. It makes the kill more of a surprise.” Certainly, Wal-Mart has made mistakes, but it has also got more things right than its rivals, who mistake its small-town simplicity for naivety at their peril. As Mr Scott puts it: “Just because we are simple, doesn't mean we are unintelligent.”

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Wal-Mart's weekly meeting

Saturday morning fever

Dec 6th 2001 | BENTONVILLE
From The Economist print edition

Wake up, workers, it's time to cheer

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AP

True believers

“WHO'S number one? The customer. Always!” The slogan roars from 500 throats. At 7:30 on a Saturday morning, while most Americans are just regaining consciousness, the top executives of the world's largest retailer crowd into a packed auditorium at its Bentonville headquarters. Most are in jeans, some have brought breakfast, many their kids. Welcome to Wal-Mart's weekly Saturday morning meeting, part evangelical revival, part Oscars, part Broadway show.

After the introductory “cheer”—in which the crowd roars the word “Wal-Mart” letter by letter (twisting their hips for the hyphen in the middle)—come service awards. An employee (“associate” in the corporate lingo) steps up. Starting as a cashier 30 years ago, she has accumulated a seven-figure sum from her profit-share. The audience cheers again—most are in the scheme. David Glass, a former chief executive, gets a ribbing for 25 years' service, complete with a fat-lady-o-gram who covers him with kisses. Next, four of America's best-known football players, including Joe Montana, come forward to deafening applause to push a new quarterback-of-the-century promotion with Kraft Foods.

But nobody forgets the serious reason for these meetings. Lee Scott, Wal-Mart's current boss, makes all his divisional managers go through their weekly sales figures. Those with shortfalls stand up and explain why. The room claps when the numbers are good. Convert that he is, Mr Scott even gently chides his wife for not standing up during one cheer.

After dry presentations from product buyers about Christmas lights, there is more fun. Employees' children skip up in rock-and-roll garb for a medley of Christmas songs. That, though, is a prelude to the real message. “We have a short, difficult run to [December] 25th,” concludes Mr Scott, but by keeping motivated “we are going to feel pretty darned good about it on December 26th.” He swoops on a nearby employee to lead the final Wal-Mart cheer. After more than two hours, everybody files out, exhausted. Soon after dawn next Saturday, they will all be back.

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Breaking merger deals

MAC the knife

Dec 6th 2001 | NEW YORK
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Escape clauses in merger contracts have been thrust into the spotlight

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THE awkwardly named material adverse change (MAC) clause has mostly been an ignored get-out in the small print of merger agreements. It allows either party in a merger, or the buyer in an acquisition, to pull out before completing the deal, should a material change damage the other party's business. What constitutes “material” is typically vaguely defined, left to the courts or other regulatory bodies to decide case by case.

In recent months, this clause has caused all sorts of trouble. Company bosses have become alarmed that several recent attempts to invoke the MAC clause have failed, raising fears that there is less scope for abandoning a corporate fiancé at the altar than they had previously thought.

In June, a Delaware judge ruled that Tyson Foods must complete its $4.7 billion purchase of IBP, a pork and beef processor, which had restated its profits after agreeing to the merger. The judge said the fall in profits was not big enough to trigger the MAC clause. Tyson had been widely expected to win the case.

After the terrorist attacks on September 11th, WPP, a British-based advertising firm, tried to pull out of its purchase of Tempus, a media-buying agency. WPP argued that the attacks had caused a serious enough downturn in Tempus's business to invoke the MAC clause. But Britain's Takeover Panel said the clause applied only in “exceptional circumstances” striking “at the very heart of the purpose of the transaction”, and that WPP had failed by a considerable margin to prove its case.

Most MAC clauses explicitly rule out general changes in the economic climate as a reason to abandon a deal. However, on October 3rd, USA Networks said it was scrapping its acquisition of National Leisure Group, in part because of the likely effects on NLG of the terrorist attacks. It is possible that USA Networks could have shown that its target's travel business was sufficiently damaged that material change had occurred. NLG apparently concluded that the MAC clause was not worth challenging, agreeing instead to a settlement in which USA Networks took an equity stake.

In the few deals announced since September 11th, terrorism has sometimes been mentioned in MAC clauses. (In a similar vein, after the 1987 stockmarket crash many acquirers introduced a “Dow Jones clause”, allowing them to pull out of a deal if share prices fell by a specified large amount.) However, most references have explicitly excluded terrorism as a way out of a deal.

The biggest deal yet to be scuppered by a MAC clause is Dynegy's purchase of troubled Enron, abandoned on November 28th. Enron plans to sue Dynegy for $10 billion, claiming that it wrongfully invoked the clause—a decision that left Enron with no alternative to bankruptcy.

Some M&A lawyers are advising clients to make their MAC clauses less vague. But this has dangers. If a clause is too specific, factors that are not cited explicitly may be assumed by the courts to be excluded.

Jim Morphy, head of M&A at Sullivan & Cromwell, a law firm, reckons that this spate of disputes is likely to prove short-lived; it is a sign of the times, with buyers scarce and nervous. In normal times, when neither buyer nor seller has the upper hand, creating a detailed MAC clause gets in the way of completing the deal. The clause has usually been a “compromise of uncertainty, with both sides taking a risk” on the assumption that the courts will uphold the clause only if there is a big and prolonged change in the nature of the business. Even in the recent headline-grabbing cases, says Mr Morphy, the courts and regulators have shown no sign of “being sympathetic to buyer's remorse”.

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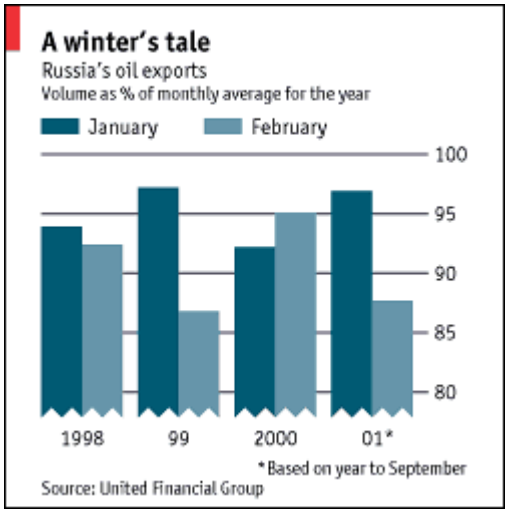
Russia and OPEC

Oilman's bluff

Dec 6th 2001 | MOSCOW
From The Economist print edition

Russia says it will cut production. That may save face, but nothing more



"WE DON'T want to. We probably couldn't even if we did. But to avoid a row we'll pretend." That, in short, is Russia's policy on the export cuts begged for by the price-fixers of OPEC. After a meeting of oil barons on December 5th, the Russian prime minister, Mikhail Kasyanov, said with a reasonably straight face that Russia would cut oil exports by 150,000 barrels per day (bpd) in the next quarter, in the hope that other countries would follow suit, and that the price of oil would stabilise at around $20-25 a barrel.

What Mr Kasyanov did not say was that Russia's harsh winter means that daily production always falls by around that much in the early months of the year (see chart). Assuming that OPEC overlooks this, it stands a better chance of corralling other non-members, such as Norway and Mexico, into making cuts of around 350,000 bpd, and then persuading its own members that it is worth cutting a million or so barrels from their exports. That could push prices up a bit. For its part, Russia avoids an all-out row with OPEC, and postpones the next rumpus until next year.

In fact, Russia has become less keen on propping up OPEC. The Kremlin's current pro-western foreign-policy stance puts it firmly in the consumers' camp. But the shift pre-dates that. A new pipeline to pump Kazakh oil across southern Russia to the Black Sea has just opened. The $4 billion project already showed a change in Kremlin thinking—earlier, any project competing with Russia's own oil and pipelines was seen as a threat. The government also wants to reverse the production decline of the past decade. Rising oil production (largely thanks to imported western technology and know-how) means that exports are growing strongly and are set to continue doing so in coming years.

Despite OPEC's bluster about a price war, Russia is better placed to survive one than the cartel is. Although Russian oil costs more to lift, its economy is less vulnerable to low prices than, say, Saudi Arabia's (which is burdened by a hugely expensive welfare state).

In any case, Russia would find it hard to enforce a real cut, even if it wanted to. The oil industry is largely privatised. Cheating, even on the Russian government's own rules, is endemic. One top Russian oilman said this week that any spare crude oil would be refined domestically and then exported. It's all in the price.

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America's steel industry

Consolidate or liquidate

Dec 6th 2001 | NEW YORK
From The Economist print edition

Can anything save America's battered steel producers?

Get article background

EPA

Not such a hot business

THE news that some of America's biggest steel companies are discussing consolidation sent the beleaguered shares of these distressed companies sharply higher this week. US Steel, the largest integrated steel maker, and Bethlehem Steel, the number two, have confirmed their involvement in the talks. Three other companies—National Steel, LTV and WHX, which owns Wheeling-Pittsburgh—are widely believed to be listening carefully.

It would be reasonable to assume that investors reacted positively to the news because they see benefits from mergers in an industry swamped with capacity and suffering from losses. The most costly plants would be closed, inept managers pushed aside, price-cutting stopped, and so on. Something similar is afoot in Europe, where three big producers are merging to form a new giant. But in fact, it is the footnote to the American companies' discussions that produced most enthusiasm.

As they consolidate, steel manufacturers are asking the Bush administration to strengthen import barriers, which would help a bit, and to take over some of the industry's enormous health-care and pension costs for retirees, which would help a lot. There could also be a redrafting of labour contracts, evolved over a century of often-bloody negotiations. “The industry as a whole is not uncompetitive,” says Paul Vastola, an analyst at Standard & Poor's, a rating agency. “Its problems are a function of high labour and legacy costs.”

Without change, the future of every American steel company is in question, except perhaps for Nucor, a non-unionised mini-mill operator. The heart of the industry grew up in the early 20th century, employing vast armies of workers in the 1940s and 1950s. In the numerous painful cuts that followed, companies radically contracted. At US Steel there is now one active employee for every five pensioners, and the ratio elsewhere is even worse.

The existence of huge liabilities, often not fully disclosed, has done more than anything to block consolidation. It has also felled some big producers. In October Bethlehem Steel filed for Chapter 11 bankruptcy. LTV filed for bankruptcy late last year and will soon appear before a court to advocate a liquidation. “Ironically,” says Bethlehem's chief executive, Robert Miller, “the devastation we are witnessing may have created the window of opportunity to once and for all fix what has been a recurring problem.”

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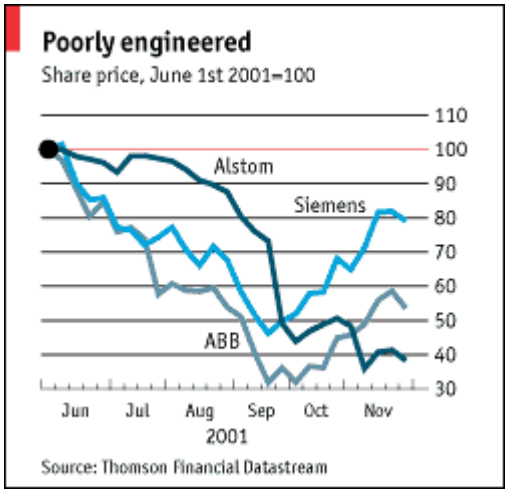
Alstom

Nasty numbers

Dec 6th 2001 | PARIS
From The Economist print edition

One of Europe's biggest engineering companies is in trouble



IT HAS been a rough few weeks for Europe's engineering and electrical giants. Such world-renowned companies as Siemens and ABB have announced swingeing cost cuts and management reshuffles, all the while talking down their prospects. Things have been worst at Alstom, an Anglo-French group created in 1989 by the merger of Alcatel's engineering business with GEC-Marconi's. Its share price has collapsed (see chart) and it could fall out of France's blue-chip CAC-40 index.

Alstom's problems began to emerge soon after September 11th when Renaissance, an American cruise-ship operator, went bust. Alstom had built eight ships for Renaissance, winning the orders in part because it offered “vendor financing”—in essence, favourable financial and contract terms. These included clauses under which Alstom guaranteed the ships' residual value. In late September, Alstom made a *euro*110m ($98m) provision and promised to offer less vendor financing in future.

It subsequently emerged that the ship-contract problems represented only a small fraction of Alstom's off-balance-sheet guarantees. Analysts were shocked to discover that the level of such guarantees, *euro*5.5 billion in 1999, had ballooned to *euro*15 billion by March this year. (The figure has since fallen to *euro*12.8 billion, following Alstom's sale of its contracting business.)

Such large sums need not necessarily be alarming. It is normal in the power and transport businesses for suppliers to guarantee that the turbines and rail systems they build will be delivered on time and will work to agreed specifications. Engineering groups make provisions in their accounts for this only if there are signs that a particular contract is going wrong.

One example is Alstom's heavy-duty gas-turbine business, which currently has *euro*1.6 billion of provisions against it, after the flawed introduction of a new range. In its half-year results, announced on November 5th, the company made a provision against problems with five rail-transport contracts in Britain. This week it emerged that Alstom has seven contracts worth some *euro*350m with Enron, a bankrupt energy group.

Although contract guarantees are potential trouble, some companies see them as a price worth paying in order to win orders. Alstom's guarantees have jumped from 25% of revenues in 1997 to 60% today, with the bulk of the increase occurring this year. A big part of that increase relates to guarantees that came with Alstom's recent acquisition of ABB's power business. Alstom admits that it operates in highly competitive markets in which buyers can demand tough contract terms.

Follow the money

Alstom faces two other nasty financial issues: debt and customer prepayments. In the first half of this financial year, its net debt rose by *euro*400m to *euro*2 billion, despite a *euro*700m gain from the disposal of its contracting arm. The company admits that stabilising and then reducing debt is a “strategic priority”. It plans some one-off tricks, such as the sale and leaseback of its property portfolio. And yet the company keeps a large cash pile: at the end of September it had *euro*2.9 billion in hand.

Indeed, money flows through Alstom in a complicated fashion. When it signs a contract, it typically receives an up-front “prepayment” from the customer. This cash is used to finance the early stages of the project and is supplemented by subsequent payments as work progresses, with the bulk of the money paid on completion. Alstom currently has *euro*6.27 billion of net prepayments on its balance sheet. It says that almost all of its cash holdings are made up of these advances.

Clearly, the more money Alstom receives in advance, the less working capital it requires. So in one sense prepayments are a good thing. But they have to be carefully husbanded so that the cash is not diverted to other uses. If the money is simply absorbed into the general business, there is a danger that ongoing projects will need large injections of cash that can be found only by borrowing or by advancing cash from new prepayments. If a company manages its contracts poorly, it can soon start to resemble a pyramid scheme, in which prepayments from new orders become vital to finance the completion of old contracts. Eventually this seems certain to lead to collapse.

Is this a plausible scenario for Alstom? Its cash balances are certainly nowhere near large enough to match its net prepayments. Raymond Greaves, an analyst with Merrill Lynch, has calculated that, in March, there were around *euro*4 billion of net prepayments on the liability side of Alstom's balance sheet for which he cannot clearly identify liquid assets. “Alstom is inherently a more risky company than it was in 1997,” he concludes.

Recent figures appear to support Mr Greaves's conclusion. In early November Alstom announced a *euro*421m cash outflow and said that this related largely to four contracts for which it had received substantial prepayments but which are now reaching completion and so draining cash from the business. One, a *euro*600m power project in Saudi Arabia, was fully prepaid. The uncomfortable implication is that Alstom's performance in previous years has been flattered by such prepayments—and that the price today is a liquidity crunch.

The company denies this. It admits to being more highly geared (its net debt-to-equity ratio is 95% and rising), but not to being more risky. It points out that around *euro*1.7 billion of prepayments have been spent in making advance payments to its own suppliers. The “liquidity gap” between prepayments and liquid assets has come down from *euro*1.4 billion in March to around *euro*350m today; this is manageable for a group with turnover of *euro*24 billion.

All the same, Alstom is taking steps to improve its cash management. That implies that it disputes the scale of the problem, not that the problem exists. François Newey, the company's finance director, says that it has begun a radical overhaul of its accounting systems. He and his colleagues face a difficult few months during which they must persuade the stockmarket that Alstom is a stable, profitable company. If they fail, Alstom's bruised shares are sure to take another beating.

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Face value

A self-styled pony horse

Dec 6th 2001
From The Economist print edition

AOL Time Warner has sprung a surprise by picking Richard Parsons as its next boss

Get article background

CLOSE observers of Gerald Levin say that they detected a change in him in recent months, especially since the terrorist attacks on New York. He had become more detached from the daily running of AOL Time Warner, the media giant he helped to create in January this year; more concerned with loftier matters of terror, culture and mortality; more expressive about the loss of his son, Jonathan, who was murdered in 1997. So perhaps the news on December 5th that he is to retire as the group's chief executive next May should not have come as a surprise. What did startle many industry-watchers was the man named to replace him: Richard Parsons.

When AOL and Time Warner came together, Mr Parsons was widely regarded as the most junior of the quartet of top managers—even though he shared the title of co-chief operating officer with Bob Pittman, and the pair of them jointly reported to Mr Levin and Steve Case, the chairman. In theory, Mr Parsons was in charge of content operations, while Mr Pittman took care of the subscription businesses. In practice, it was Mr Pittman who was given the task of bashing together the various bits of a conglomerate that had for years, as Time Warner, operated as separate uncompromising fiefs. If Mr Pittman was the driven, sharp-minded, hands-on operator, Mr Parsons was the more genial, relaxed public face.

So the elevation of Mr Parsons ahead of Mr Pittman has surprised many media types. It may raise questions about Mr Pittman's future, though he said this week that he looked forward to staying on—and he is now the man to whom all divisions report. It does not, however, raise fresh questions about the purpose of AOL Time Warner. It just leaves the old ones still unanswered.

While Mr Pittman came to the merged group from Mr Case's AOL, Mr Parsons is a Levin protégé. Indeed, if nothing else, his appointment will fend off accusations that, with Mr Levin's departure, AOL has got the upper hand over Time Warner. A lawyer by training, Mr Parsons was hired by Mr Levin in 1994 to become president of Time Warner after he had quit as head of Dime Bancorp, a thrift, in order to work for Rudolph Giuliani. (Mr Parsons had toyed briefly with the idea of Republican politics—and more recently turned down an offer to work for President George Bush.) Since the merger with AOL, he has spoken as a true believer, muttering all the phrases that drop so readily from Mr Levin's lips, about “synergies”, “cross-promotion” and “leverage”.

A nice man, but the right man?

Is Mr Parsons the right man to reap these elusive benefits? While much will be made of the fact that he is an African-American, he has always considered his race to be irrelevant. Although it is hard to identify any single big achievement in his career, three factors could work in his favour. The first is that he is a

“people person”, and the entertainment business, particularly the recording industry and Hollywood, is all about luring and retaining talent, and negotiating with egos supremely unburdened by self-doubt.

The second is that his beguiling nature makes him well-suited to deal with the regulators. This is an exercise that consumes much time, thanks to the new deal-making opportunities that are now worth lobbying for, given a more relaxed approach in Washington.

Third, he may be able to nurse some of the bruises left behind after a year of trying to integrate the various bits of the empire. The idea of further integration was always sound enough. Mr Pittman sought to overturn the old Time Warner culture by bringing together the various division heads every fortnight, to get them to share ideas. Mr Parsons is plainly an enthusiast too: “There's nothing like getting a bunch of people in a room and have them work as colleagues and ask ‘how can we make this huge?',” he told *The Economist* recently. “Otherwise you get in these endless disputes and fights over how to allocate the benefits of an investment.”

To the credit of the group, this quest has already achieved some successes, notably “Harry Potter”, which has broken box-office records, and “The Lord of the Rings”, to be released shortly with almost as much cross-promotional hype. With the endless spin-offs, and a pre-Christmas release, these will help lift the group's fourth-quarter results.

Yet there have been hiccups too. For one thing, the economic downturn has undermined the more extravagant promises about what integration would achieve. Nobody could blame Mr Pittman for recently having to lower the group's forecast for 2001 revenue growth (which had been optimistically set at 12%) to 5-7%. Indeed, AOL Time Warner has been sheltered from the full blast of the downturn as it derives only a quarter of its revenues from advertising.

Yet certain divisions have been more co-operative than others, and Mr Pittman's abrasive style has irritated some. Even the promotion of “Harry Potter” was not seamless: there was a spat, for instance, between *Entertainment Weekly*, a Time Inc title, and Warner Brothers, which made the film, over coverage. This may be where the consensus-minded Mr Parsons could come in. “My job is to move around and cool out the younger horses,” he told the *New Yorker* recently. “I'm the pony horse.”

However much soothing and schmoozing Mr Parsons does, his challenge will be the same as Mr Levin's: to demonstrate what exactly the merger was for. In other words, what is it that the merged group can do that its constituent parts could not have done apart?

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Correction

Dec 6th 2001
From The Economist print edition

The face accompanying our Face value in the print edition last week was the wrong one. Instead of showing Joseph Luter III, chief executive of Smithfield Foods, we pictured his son, Joseph Luter IV, who is an executive vice-president at the company. Sorry.

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About sponsorship

Enron

The amazing disintegrating firm

Dec 6th 2001
From The Economist print edition

The tragedy of one company's rise and fall

Getty

Get article background

PRECISELY a year ago, Enron unveiled its master plan for domination of the universe. Not content with changing from an obscure gas-pipeline concern into the world's biggest energy trader, Enron's bosses set their sights higher. Jeffrey Skilling, then president, vowed to skyrocket past ExxonMobil to become the world's leading energy firm—quite an ambition, given that Exxon had just posted a quarterly profit of over $4 billion. But even that was not enough for Mr Skilling. He had a business insight so powerful that it would transform Enron into the world's leading company, period: the “disintegration” of the traditional corporation.

Mr Skilling believed that deregulation and market forces would force traditional, asset-heavy companies to break up into thousands of niche players. Rather than being vertically integrated, companies would be “virtually integrated”—by enterprises such as Enron that would “wire those thousands of firms back together cheaply and temporarily.”

As things have turned out, it is Enron that has disintegrated. The company filed for Chapter 11 bankruptcy on December 2nd. The story behind the most spectacular corporate roller-coaster ride in memory is impossible to tell in full detail yet, thanks to the secrecy and opacity for which Enron is notorious. The principal actors involved are staying mum, though the dozens of lawsuits and official investigations now under way should eventually shine a fiery spotlight on Enron's murky doings. Even so, a rough outline is now clear.

Pride before the fall

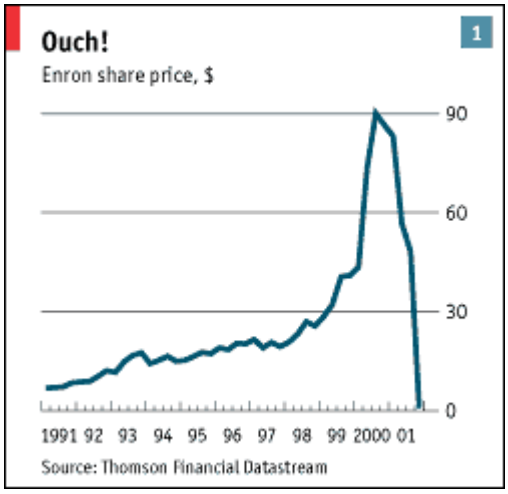
What drove Enron into bankruptcy in what seems like just a matter of weeks? In fact, signs of trouble had surfaced much earlier. Rebecca Mark, a rising star in the 1990s, launched Enron on ill-fated forays into asset-heavy businesses overseas such as the Dabhol power project in India and Wessex Water in Britain. During the first half of this year, Enron's shares fell to around half their peak of $90, after the firm was burned in the fallout from California's botched power deregulation and from losses on its investments in such exotica as bandwidth trading.

These events raised questions about Enron's direction under the brash Mr Skilling, who had become chief executive in February. But he disliked criticism: when, during a conference call, one analyst dared to ask a pointed question, Mr Skilling snapped that he was an “asshole”. Unable to take the heat, and perhaps seeing an even worse financial crisis ahead, he unexpectedly resigned in August. That forced Kenneth Lay, the chairman, to take back day-to-day control of the company he had founded a decade and a half ago.

Shareholders hoped that the return of Mr Lay, who promised more financial disclosure, would revive Enron. But within weeks, it was

mired in a financial scandal that rapidly ran out of control. By October, it was on the brink of collapse, and had to accept a most unpalatable notion: a takeover by Dynegy, a smaller energy-trading rival based down the road in Houston.

The biggest crack in the façade came with the release of third-quarter results in mid-October that showed a $1 billion write-off on broadband, water and other bad investments. Worse, Mr Lay slipped in the news that Enron had taken a $1.2 billion reduction in equity capital, stemming from a hedging deal with a related private-equity fund. Almost nobody outside Enron was aware of the terms of the deal with this “structured-finance vehicle”, which turned out to be just one of many off-balance-sheet devices. Enron's failure to offer details about the risks from these murky partnerships led many to fear the worst about its finances.



Accounting for growth

The bad news kept coming. Enron's chief financial officer, Andrew Fastow, who had set up and profited from some of these partnerships, was pushed aside. The company restated its accounts for the past five years, and in the process wiped out nearly $600m of profits, about a fifth of the total. The news triggered an investigation by the Securities and Exchange Commission. Yet the firm still refused to come clean. More than any actual financial liability, that obfuscation proved the last straw.

Once investors and counterparties started to doubt—even slightly—that Enron was profitable, its survival became an immediate issue. Enron had been able to raise loans because its debt was rated as investment grade; but the loans had clauses requiring Enron to make additional payments if it was downgraded. As this prospect loomed nearer, the idea of this highly leveraged company having to raise fresh money scared off even more customers.

The proposed merger with Dynegy should have restored confidence, and thus halted the unwinding of Enron's trading book. In the event, Dynegy took a closer look inside Enron's black hole and decided not to proceed—making the downgrading of Enron's debt and its bankruptcy inevitable. Chuck Watson, Dynegy's boss, argues that even another $1.5 billion would not have saved Enron, given the management's refusal to be open about its financial position even with its rescuer. “It is incredible that they continued in this manner...Enron never understood that business is not just about numbers and the balance sheet: it's about your brand, and the confidence you inspire.”

How did Enron manage to pull off its confidence trick?

This potted history may tell what happened, but it raises a question: how did Enron manage to pull off its confidence trick? The key to understanding its collapse is contained in its annual report for 2000. The company, the report says, “is laser-focused on earnings per share (EPS), and we expect to continue strong earnings performance.”EPS is a number that is watched obsessively by investors and analysts, and so is often crucial to share performance. It is also relatively easy to manipulate.

It now seems clear that growth in EPS became ever harder for Enron to deliver. So its laser focus switched to looking for accounting fiddles that would make it look as if EPS was going up, and also hive debt off its books. To that end, several off-balance-sheet entities were set up. These were not wholly independent of Enron, but were judged sufficiently separate that their profit or loss did not have to be consolidated into the company's results. Assets, or portfolios of assets, were then “sold” to these entities.

For example, swaps were created on Enron's balance sheet that would compensate the buyer of assets in the event of an unexpected loss. Sometimes the quality of the assets sold was doubtful (a block of Internet shares, say); sometimes the third-party entity would pay using a loan from Enron, which then booked the interest on the loan as income. For illiquid assets, Enron had considerable discretion in deciding what constituted a fair price. According to Off Wall Street, a consultancy, around 28% of Enron's EPS in 2000 came from gains on sales of securitised assets, mostly to third parties connected with Enron.

Andersen, Enron's auditors, may have allowed these transactions because they were considered too small to be material. But a combination of bigger losses to hide and the success of the disguise meant that the partnerships soon grew so big that it now seems surprising, to put it no stronger, that the auditors did

not revisit their accounting treatment and legality.

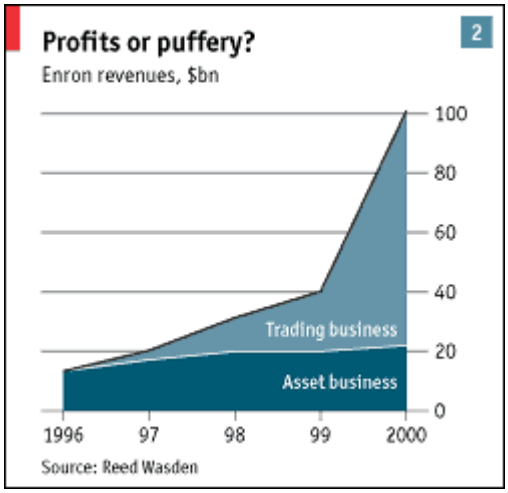
The thorniest question of all is why Enron ever had to resort to these financial shenanigans. Perhaps evidence of simple, criminal activity will be found. Yet greed was surely not the only factor. Although Enron's accounts remain a black box, there are growing suspicions that even its energy-trading business—the jewel that Dynegy wanted so badly—may not have been as impressive as it seemed.

This is not to deny that Enron's traders were formidable. Harvey Padewer of Duke, an American utility that was a big rival of Enron's, concedes that “Enron had the biggest and strongest energy-trading business in North America.” The company accounted for 15-20% of gas and power trading in the region. John Martin, an economist at Baylor University, reckons that the internal risk management of the trading business was basically sound.

But did high volumes really add up to big profits? At first, yes. However, partly as a result of Enron's success in expanding competitive markets, dozens of rivals flocked into trading. There proved to be few barriers to entry in energy trading; and Enron's skilled employees were snapped up in droves by rivals.

One indication of Enron's growing difficulties was the declining returns on extra revenues. Revenues grew by $10 billion from 1998 to 1999, and then jumped by another $60 billion to $100 billion in 2000. Profits before tax, on the other hand, rose by $1 billion in 1998, and by rather under $500m in both 1999 and 2000. Enron's return on capital was only 6.6% in 2000, less than rivals such as Williams and Dynegy.

More pointedly, notes Cary Wasden of Reed Wasden, an investment firm that has long been sceptical of Enron, the firm's trading margins collapsed, from 5.3% in early 1998 to less than 1.7% in the third quarter of this year. He notes that “margins have fallen in spite of the company's practice of selling fixed assets (ie, generation plants) and booking the gains as operating revenues.”



Whether Enron pumped up its trading revenues is a crucial question. As chart 2 shows, the spectacular growth of the past year or so was due almost entirely to Mr Skilling's embrace of the “disintegrated”, asset-light trading model. Dean Girdis of the Petroleum Finance Company, a consultancy, points to other possible wheezes. He reckons Enron may have used limited partnerships and other financial vehicles to inflate profits. Another technique he points to is the lumping of assets such as pipelines into its trading business. In fact, profits from hard assets may have masked the shrinking margins of Mr Skilling's virtual trading business and encouraged him to bet the company on his radical, risky view that Enron could create markets in just about anything.

With margins shrinking, Mr Skilling tried to stretch the brand into new areas. Enron grew to have contracts with some 8,000 counterparties, in hundreds of business lines ranging from credit insurance to metals trading. In practice, this meant taking ever bigger bets, such as trading telecoms bandwidth.

As these bets started to go horribly wrong all at once, Enron may have felt compelled to pump up its revenues and profits using ever more ingenious tactics. Dynegy's Mr Watson puts it this way: “Enron tried to be a worldwide commodities broker and market maker to the world, open 24 hours a day, with just a BBB rating, unlike banks, which have a much stronger balance sheet—and the market fell for it.”

The limits to markets

In one sense, the saga is far from over. In bankruptcy, Enron can borrow from banks, which know that fresh loans will be senior to old ones. The plan now seems to be to sell what assets it can (the ownership of its main gas pipeline is disputed by Dynegy), so as to keep alive the core trading business and the Internet operation, EnronOnline, perhaps with a view to selling them to a bank.

Yet it looks unlikely that Enron can stay alive, even in truncated form. A buyer of its trading and online operations would surely ditch such a besmirched brand. In any case, the company may be crippled by lawsuits that are likely to drag on for years. A better strategy for a would-be buyer might simply be to hire away Enron's best staff and start a new business.

That points to the most ironic twist of all in this morality tale. Mr Lay had always described himself as “passionate about markets”. That fervent belief in the invisible hand led him to spot one of the most powerful trends of the past decade: the deregulation of commodity markets. He would often forge ahead fearlessly into newly deregulating markets, bully recalcitrant regulators into speeding reforms and develop clever financial vehicles that pressed to the very edge of the law. In the end, though, Enron appears to have overstepped the mark. The resultant backlash comes as a bitter reminder that the market forces that Mr Lay once worshipped can prove a double-edged sword.

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Private equity

The new-economy vultures

Dec 6th 2001 | NEW YORK
From The Economist print edition

Record amounts of private-equity investments are up for sale. Who will buy them?

ONE key to the success of American capitalism must surely be its ability to reinvent itself in times of failure, to forge silk purses from sows' ears. Over the past three years, private-equity funds—those that make a business of investing in unlisted, private companies—have invested billions of dollars in new technology companies, and have lost most of the money. But not everybody thinks these investments are worthless. Some innovative capitalists still aim to turn a profit. They are today's equivalent of the “vulture” investors of a decade or so ago, who made a fortune by buying property from distressed savings and loan institutions.

Sophos Capital, for instance, is a start-up investment firm staffed by former technology entrepreneurs that sees potentially good businesses among the many no-hopers financed by venture capitalists during the bubble years of the late 1990s. The Sophos partners started as consultants to distressed technology firms—in a funky temporary office (complete with an almost-pristine table-football machine) borrowed from one such company. Then they hit on their investment idea. They say they will announce their first big deal in the next few weeks.

Sophos reckons that its partners' practical experience of running technology firms (not all of them into the ground) will enable them to spot the diamonds among the dross. There are many start-ups with variations on this strategy, most of them scouring venture portfolios to buy what they hope will be a winning, next-generation technology, rather than the company that owns it.

Many private-equity firms and vulture funds with a longer history are, however, loth to buy distressed technology businesses. Some investors, such as Hicks, Muse, even helped to create the failures. On the other hand, several big investment banks are on the prowl. Goldman Sachs has already raised $1 billion for a fund to invest in the secondary market for private equity. GE Capital is said to be planning something similar.

Until now, there has not been much of a secondary market: perhaps $1 billion-worth of transactions a year. This may be about to change. Coller Capital, a London-based pioneer of secondary trading in private equity, reckons that $20 billion of private-equity investments are now up for sale. Plans already announced suggest that $6 billion will be in search of targets by early next year.

Who are the sellers? In recent years, money invested in private equity in America has grown fast, to reach nearly $190 billion by 2000. Of this, $106 billion went into funds that invested in start-ups; the rest was invested in funds to buy established companies.

Performance has been hugely disappointing. Investors have slashed their expectations of the returns that they can hope to earn from private equity, and have accordingly cut the amount they invest in it. Calpers, California's huge pension fund for public employees, says that over half of its many fund managers who invest in private equity lost money between 1998 and 2000, compared with 15% who lost money over the period 1990-97. In all, nine-tenths of venture capital committed during the bubble years may have been squandered.

In all, nine-tenths of venture capital committed during the bubble years may have been squandered

Many big investors are desperate for cash to finance their core businesses, and so are keen to raise what they can by selling their private-equity holdings. This is particularly true of big technology firms with private-equity arms, and of banks, which have capital-adequacy ratios to maintain at a time when bad loans are rising. J.P. Morgan Chase and Bank of America have both offloaded some of their private-equity portfolios. As yet, there has been no deal to match Coller's $1 billion purchase last year of NatWest's private-equity portfolio (after NatWest's takeover by Royal Bank of Scotland), but it is surely only a matter of time.

Some once-rich individuals who invested in the field have been unable to make promised payments into venture funds. Rather than default, and see their stake fall to nothing, they are looking to sell their limited partnerships, for as little as one-fifth of what they put in.

Many that run venture-capital funds, particularly the newcomers, also want out. Most may scratch a living from the management fees that they earn, but many have no prospect of earning performance fees or of raising another fund. They must work like crazy to keep the few surviving firms alive, and they are being continuously hassled by disgruntled investors. Raising cash from their investments through initial public offerings is no longer a feasible exit route. Hence the need for other sources of funding, even for the best companies in a portfolio.

Buy low, sell lower?

Even so, not everybody is convinced that there will be a selling frenzy. Jesse Reyes, of Venture Economics, a research firm, says that venture investments tend to be either good or bad, with nothing in between. If they are good, they are not for sale; if bad, nobody wants to buy them.

There are certainly obstacles to a secondary market. Privatetrade.com, an attempt at a private-equity exchange, has struggled, perhaps because nobody wants to announce publicly that he is a seller (ie, a loser). Kathleen Dunlap, who runs the exchange, says that it has negotiated several deals off-exchange, and that business will pick up when prices bottom out. Buyers are reluctant to commit themselves to deals so long as prices are falling; sellers struggle to accept that lower prices are accurate.

It does not help that, with these technology firms, there are few hard assets—something, at least, that bust savings and loans could boast. Instead, venture portfolios' chief assets take the form of intellectual property, much of it work in progress. As Ted Stone of Sophos puts it: “This sort of vulture investing is much riskier than during the real-estate crash. It is not just ‘buy low, sell high’. It's ‘buy low, add value, sell high’.” In other words, you have to know what you are doing. Then you might—just might—make a lot of money.

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Private equity in Europe

The princess and the pearl

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Using alchemy to turn high-risk equity into bonds

FOR the past three years, creative risk managers have explored ways of bringing private-equity investment to a wider audience, such as retail investors and pension funds. This is especially the case in Europe, where many private-equity funds avoided the excesses of the American technology bubble and have even made decent returns. Often, the fear of denting their capital in any way puts European investors off anything that seems risky. The trick is for managers to slice off the risk of capital loss and sell it to somebody else, such as an insurer. The remaining investment may produce less return, but the risk is more acceptable.

Two private-equity boutiques in Zug, Switzerland, have led the way in such deals. The Partners Group created the Princess fund in 1999, a $700m vehicle for investing in private-equity portfolios, with the risk of capital loss borne by Swiss Re and other reinsurers. Last year, the same partnership launched Pearl, a *euro*660m ($590m) fund. In May this year, Capital Dynamics, also in Zug, designed Prime Edge, a set of bonds, backed by private equity, with different risk-reward profiles; it got Standard & Poor's, a credit-rating agency, to give each slice a separate rating. The top slice, with the best risk profile, was given an A-grade rating. In practice, all tranches were guaranteed by Allianz Risk Transfer, part of Allianz, a German insurer.

Others have missed the boat. J.P. Morgan Chase spent 18 months on an $800m private-equity-linked structure before putting it on ice, for lack of demand. It does not help that insurers have lost their appetite for insuring private equity, after some well-publicised write-downs on banks' private-equity portfolios.

So investment bankers now favour a structure that does not rely on an insurance “wrap”. The key is the collateralised debt obligation (CDO), of which Prime Edge was the forerunner. It turns the investment into something more like a family of bonds, with the highest risk of loss stuffed into a thin slice of equity. The breakthrough for Prime Edge, says one admirer, is that its top slice achieved a “stand-alone” rating: it was based on Standard & Poor's understanding of private-equity returns rather than on the credit of a guarantor. And it assigns bond-like default probabilities to slices of private-equity funds.

Turning the cashflows and risks of a private-equity fund into a rateable instrument is not straightforward. Typically, investors commit money upfront, but it is drawn down over several years: there is little return until investments are sold. This is known as the “J-curve”. For the comfort of investors used to buying bonds and being paid a coupon, CDO-builders beat the J-curve by taking all the money on day one, putting cash in the money market, and “over-committing” on perhaps double the number of private-equity investments.

Investment bankers expect a spate of private-equity CDOs next year. Some of this activity will be banks securitising their own lacklustre portfolios, to get them off their books. Some structures promise to be complex in the extreme. One investment banker proposes to beat the J-curve by investing in hedge funds and feeding the proceeds into a private-equity vehicle. A sure way of doubling your money.

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The euro

Irrational pessimism

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None of the explanations for the euro's weakness stand up

EVER since the euro was born, economists have been trying to come up with reasons for its weakness (down by 25% against the dollar since its launch in January 1999). One by one, their theories have bitten the dust.

The first explanation was that America's GDP was growing faster than GDP in the euro area, and so a fall in the euro against the dollar was both inevitable and desirable. Since March, though, America has been in recession. The latest forecasts suggest that the euro area will enjoy faster growth than America both this year and next. Still the euro remains weak.

Theory number two: productivity growth, and hence the profitability of investment, is higher in America than in the euro area. Alan Greenspan, chairman of the Federal Reserve, told a gathering of the Euro 50 Group in Washington last week that the weak euro reflected investors' expectation that America's productivity growth would outpace the euro area's in the years ahead. Rigid labour markets, he argued, make it harder to dismiss workers. Much of the return from investment in information technology, he said, comes from cutting labour costs.

A recent European Commission report on competitiveness appeared to confirm that America's productivity growth has been faster over the past decade. However, it used a flawed measure of productivity: GDP divided by total employment. In the euro area, average hours worked have fallen, so the measure understates true productivity growth. If instead one takes GDP per hour worked, American productivity rose by an annual average of 1.6% in the ten years to 2000, but euro area productivity rose by 1.9%. Total factor productivity, which takes account of the efficiency with which capital and labour are used, also grew slightly faster in the euro zone than in America.

The notion that American productivity leaves Europe's behind is based on performance over the past five years—which was partly inflated by an unsustainable investment bubble. Europe needs structural reform, but low productivity growth is not an explanation for the euro's weakness.

Popular explanation number three is that investors have more confidence in the Fed than in the European Central Bank (ECB). It is argued that the ECB focuses to excess on price stability and not enough on growth. A paper presented at the Euro 50 Group meeting by Antonio Borges and Francesco Giavazzi questioned this. One rule of thumb for monetary policy is the “Taylor rule”, where the “correct” interest rate is derived from forecasts of inflation and the current size of the output gap. Judged against this rule, the authors conclude that the ECB's policy has not been noticeably tighter than the Fed's. America has required more rate cuts because its economy has slowed more sharply. The Taylor rule is sensitive to assumptions, but these findings suggest that popular criticisms of the ECB are too crude.

A fourth theory is that the dollar has become a “safe haven”, so that when investors become more risk-averse, they pile into dollars. Should America suffer a deep recession, this hurts the world economy as much, if not more. So, it is argued, more risk-averse investors will buy dollars. Should America have a strong recovery, they will buy dollars too. The dollar, in other words, is strong because investors expect it to be. That is a worrying basis on which to make investment decisions.

A better explanation of the euro's weakness may be that it started life overvalued, and then overshot in the opposite direction. Most theories assume that foreign-exchange markets are entirely rational. A curious starting-point.

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Corporate profits in America

What doth it profit?

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Corporate America is seeing an unusually severe slump in profits

"NOTHING contributes so much to the prosperity and happiness of a country as high profits," proclaimed David Ricardo, an early-19th-century economist. If so, America is in a miserable state: corporate profitability has fallen to its lowest level since the depression of the 1930s.

In the third quarter of this year, the pre-tax profits of non-financial firms fell by 26% from a year earlier, to a level equivalent to 7.5% of GDP in the non-financial business sector. As recently as 1997, that figure was 12.5%. Profits have further to fall. Economists at J.P. Morgan forecast that average profits will drop at an annual rate of over 20% this quarter, leaving profit margins at their lowest for more than 60 years.

Profit margins always shrink in recessions, but this time the squeeze is particularly severe. Because companies have so much excess capacity, they have little pricing power. Meanwhile, unit labour costs are rising more rapidly. Wages still outpace inflation by a wide margin, and productivity growth has slowed.

America entered this recession with historically low inflation. As a result, nominal GDP growth is likely to be close to zero over the next two quarters, which will put even more pressure on profits. Wages, which make up two-thirds of total costs, typically move down only reluctantly, so profits take the strain.

The 2.9% jump in consumer spending in October, the biggest increase on record, brought cheer to those betting on a strong economic recovery. The jump, though, largely reflected aggressive discounting, especially by car makers and retailers. Discounts may boost volume, but at a high cost to profit margins.

Stockmarkets rallied strongly this week in hope that economic recovery, and hence higher profits, is around the corner. But even if the economy turns round early next year, a strong rebound in growth is unlikely so long as firms are saddled with excess capacity. And as long as nominal GDP growth remains subdued, so too will be the growth in profits. That means that stockmarket investors are likely to be disabused, and also that firms will be under pressure to improve their finances by making further cuts in investment and jobs. And that could prolong the recession.

Stockmarket bulls point out that productivity growth has held up better during this recession than in the past, offering better hope of faster profits growth in future. The link between productivity growth and profits is more complicated, however. Over the past three years, as productivity growth has quickened, profit margins have actually fallen. As with earlier technology revolutions, the lion's share of the spoils from information technology is going to consumers, not producers.

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Standard Chartered Bank

Not one of us

Dec 6th 2001
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After kicking out its chief executive, Standard Chartered looks vulnerable

IN THE end, Standard Chartered could not keep up the pretence any longer. The bank's chief executive, Rana Talwar, who came from Citibank in 1998, and its chairman, Sir Patrick Gillam, an old hand, were at each other's throats—and one of them had to go. It was the young, well-regarded Indian who was ousted last week, rather than Sir Patrick, who is 67 years old and due to leave in 2003.

As soon as Mr Talwar arrived at the bank, he made the bank's top managers face some uncomfortable truths. In the late 1960s, he reminded them, Standard Chartered and the Hong Kong & Shanghai Banking Corporation (HSBC) had roughly similar geographical reach, balance sheets, market capitalisations, profits and staff numbers. Why was it, he asked, that Standard Chartered had so dismally underperformed its rival emerging-markets bank ever since? If it was not to lose even more ground, Mr Talwar told them, its culture and strategy would have to change.

Under his leadership, Standard Chartered made three biggish acquisitions, worth $3 billion in all: Chase Manhattan's consumer-banking business in Hong Kong, Grindlays Bank in India and Nakornthon Bank in Thailand. Thanks to these, and to the disposal of Chartered Trust, its British consumer-finance and contract-hire business, the share of the bank's profit that came from Asia and the Middle East rose sharply. Last year Mr Talwar started to hack away at the bank's cost base, to investors' approval. He promoted local African, Indian and Hong Kong managers to run the bank's operations overseas, traditionally a role reserved for British expatriates.

Forcing the pace of change at Standard Chartered, half of which dates from a royal charter for India, Australia and China granted by Queen Victoria in 1853, was a hard task, and Mr Talwar made enemies along the way. Critically, he failed to keep in with the bank's non-executive board members, viewed in the City of London as a clubby lot. It was these folk who turned on Mr Talwar last week, despite his support from the executive managers. Most recently, differences between Mr Talwar and his chairman had been aggravated by informal approaches from Barclays Bank and Lloyds TSB, both interested in acquiring Standard Chartered. While Sir Patrick was adamant that his bank should remain independent, Mr Talwar was willing to consider a deal, at the right price.

Its growing business in high-margin consumer finance in Asia makes Standard Chartered a tempting bite for another bank. In market share for credit cards, it ranks among the top three banks in each of Hong Kong, Malaysia, Singapore and India. In India, Nick Lord of Schroder Salomon Smith Barney reckons, Standard Chartered now has more than a quarter of the 3.8m or so of credit cards issued. The bank rates highly its chances in China. Both Lloyds TSB and Barclays Bank are keen to reach outside their domestic British market. Citibank, from where Mr Talwar once sized up Standard Chartered as a target, would also be interested. Now that rivals know that there has been dissent within the bank over its future, they may try harder to persuade Khoo Teck Puat, a Malaysian based in Singapore who is Standard Chartered's largest shareholder, to part with his 14.5% stake.

Fending off predators will now be the job of Mervyn Davies, Standard Chartered's former head in Hong Kong, who was promoted to group chief executive last week. Mr Davies says that if the bank is to stay independent, it must translate its position in emerging markets into higher shareholder returns, and “not just talk about the future all the time.” There will be no shift from Mr Talwar's focus on consumer finance, and Mr Davies will also carry on his predecessor's efforts to trim lending to less profitable corporate borrowers. So Mr Talwar's ideas, if not his management style, will continue.

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Turkish bank reform

Two Frenchmen in Ankara

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While Argentina stumbles, Turkey pulls up its socks

THEY call themselves “Frenchmen”, the Istanbulis who commute weekly to work in Ankara, because they feel like foreigners in their own capital. Two of them are trying to make a difference to Turkey's banks, after years of abuse. Engin Akcakoca is in charge of the 15-month-old Banking Regulation and Supervision Agency; Vural Akisik runs the two biggest state-owned banks, Ziraat and Halk. Both men ran private banks for years. This year they have been giving all of Turkey's banks their first real taste of market discipline, on pain of dire punishment.

Bank reform is the cornerstone of the International Monetary Fund's $19 billion aid programme for Turkey, which has continued—with hiccups and some big increases—ever since December 1999. Fund officials in Ankara this week at least did not walk out, as they did in July in a battle against political patronage in the telecoms industry. Turkey's bickering four-party coalition sees the wisdom of letting the technocrats, headed by the economy minister, Kemal Dervis, a former World Bank man, get on with the job and keep the foreign aid flowing. This is (familiar phrase) Turkey's last chance; and this time, it seems, the government is biting the bullet.

By the end of the year, the government has promised, the four banks left orphaned with the Savings Deposit Insurance Fund will be either liquidated or sold. The insurance fund has taken over 19 banks since 1997, after a series of crises. This year, six have been sold, seven merged and two closed, cutting administration costs from $115m to $22m a month.

Tevfik Altinok, who runs the fund from the newest and ugliest glasshouse in Istanbul, would like to see the remainder closed, since buyers are unlikely to be found—except perhaps for Etibank. In the past few weeks the supervisory agency has been auctioning some of the insured banks' deposits, packaged with specially designed government bonds. These deposits, two-thirds of them in foreign currency, would otherwise have to be repaid: they are being rolled over at above-market rates. Any deposits not sold are likely to fall into Mr Akisik's lap at Ziraat Bank.

So far the government has spent $20 billion cleaning up the banks. It has reduced their numbers from 79 to 67, laid off 20,000 people, taken on the bad loans of banks sold, and pumped new capital into the state banks that are left. More capital is needed. The banking sector is tiny compared with the economy it serves. Total bank assets are around $120 billion, not even the size of Scandinavia's largest bank.

Mr Akcakoca has ruled that banks must meet Basel capital-adequacy standards, 8% of risk-adjusted assets, by the end of the year, or be closed. There will be some slippage: banks won't report their year-end balance sheets until March, and even Mr Akcakoca admits that a 7% capital ratio would be acceptable if they are doing the right things. New capital is expected to come from bank mergers or from parent groups. The Dogus group is merging Garanti Bank, the fourth-largest private bank, with Ottoman Bank. Yapi Kredi Bank, the third-biggest, is supposed to be merging with Pamukbank, although the parent, Cukurova group, is dragging its feet.

Before September 11th, some foreign buyers were circling. Britain's HSBC has bought Demirbank, the country's fifth-biggest, and will concentrate on corporate and personal finance. From continental Europe, UniCredito, IntesaBCI and BNP Paribas have identified quarries. Citibank may yet buy Turk Ekonomi Bank, which broke off talks last year. This is a successful though highly conservative bank, which has seen the need to grow and is itself eyeing Kentbank. Oyak Bank, owned by the Army Pension Fund, is also in expansion mode, after making a windfall from the Turkish lira's collapse in February (rather unpatriotically, it had switched out of Turkish government bonds into dollar investments). In August it bought a six-pack of banks merged under the banner of Sumerbank, and may add Etibank, if the Koc

group does not get there first.

The big prize is Akbank, owned by Sabanci, Turkey's biggest and soundest family group. There are rumours of talks with Deutsche Bank. Akbank's domestic debt is rated higher than the country's by Fitch, a rating agency.

Beefing up the banks and then encouraging them to lend is a top priority

Beefing up the banks and then encouraging them to lend is a top priority. Traditionally, Turkish banks have shunned lending in favour of buying high-yielding government bonds. Even now, buyers of troubled banks have picked out only a few of their loans, leaving the rest with the state insurance fund. Coskun Ulusoy, who runs Oyak, took hardly any Sumerbank loans. Yet even though his bank has cash, he has a problem putting it to good use. Now that inflation is falling, government bonds are less attractive. At the same time, most banks are too highly geared to make risky commercial loans—the average loan-loss rate is around 15%.

Some people suggest that the government should pump equity into banks as a minority shareholder. But that would be tantamount to renationalisation, which is anathema to America, Turkey's ally, and would probably be vetoed by the IMF. Even without fresh capital to hand, the banks that are left are on an irreversible track to improvement. More foreign buyers may even be tempted next year, if the “Frenchmen” keep politicians at bay.

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Globalisation and prosperity

Going global

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How trade is good for you

OPPONENTS of globalisation claim that poor countries are losers from global integration. A new report* from the World Bank demolishes that claim with one simple statistic. If you divide poor countries into those that are "more globalised" and those that are "less globalised"—with globalisation measured simply as a rise in the ratio of trade to national income—you find that more globalised poor countries have grown faster than rich countries, while less globalised countries have seen income per person fall (see chart).

Between 1945 and 1980, the World Bank reckons, economic integration was concentrated among rich countries. Since 1980 that has changed. Manufactured goods rose from 25% of poor-country exports in 1980 to more than 80% in 1998. This integration was concentrated in two dozen countries—including China, India and Mexico—that are home to 3 billion people. Over the past two decades, these countries have doubled their ratio of trade to national income. In the 1990s their GDP per head grew by an annual average of 5%. Life expectancy and schooling levels increased.

Another 2 billion people live in the rest of the developing world, where the story is rather different. In these "less globalised" countries, including much of Africa, the ratio of trade to national output has fallen. In the past decade, income per head has shrunk, and the number of people in poverty has risen. In short, the poor countries that are in the biggest trouble are those that have globalised the least. The challenge for development—and the World Bank—is to reverse this marginalisation.

* "Globalization, Growth and Poverty", World Bank policy research report. December 2001

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Economics focus

When countries go bust

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Argentina shows the need for sovereign bankruptcy procedures

WHAT do Kenneth Lay, chairman of Enron, and Domingo Cavallo, Argentina's economy minister, have in common? Both were once lionised on Wall Street. And both now see their respective charges collapse, because creditors have lost confidence. At least Enron can declare bankruptcy and seek protection from its creditors; Argentina has no such shelter.

If the International Monetary Fund has its way, that could change. Anne Krueger, number two at the Fund, recently suggested that a country whose debts were “truly unsustainable” should have a mechanism for restructuring them, in rather the same way that companies can file for bankruptcy.

The idea is that a troubled country would get temporary legal protection when it suspended payments on its debt, in return for promising to negotiate with its creditors in good faith and, meanwhile, to follow sound economic policies. During the “standstill” period, exchange controls could be introduced to reassure creditors that money was not fleeing the country. Lenders would get an incentive to provide new “working capital” by giving new debt seniority over old. And minority creditors would be bound to go along, once enough creditors had agreed.

The notion of such a sovereign bankruptcy procedure is not new. This is the first time, though, that it has been advocated so openly by the IMF top brass. Crucially, America, along with Canada and Britain, is also interested.

There is little argument that the present system for dealing with troubled debtors is inadequate. In the debt crisis of the 1980s, when the governments of developing countries owed debts mainly to banks, creditors were corralled around a table by the IMF and cajoled into accepting roll-overs and, eventually, debt reduction. But the growth of private capital flows during the 1990s has made such an informal approach unworkable. Creditors have grown in number, largely because of an increase in the use of bond finance. Debtors have grown, too, as private companies in emerging economies have joined governments in borrowing abroad. And debt instruments have become vastly more complex.

Recent crises have produced a welter of responses. In cases where bank debt is the chief concern (eg, South Korea in 1997), creditors have been pushed into providing more cash, with the same sort of arm-twisting as in the 1980s. Where bonds are the problem, unilateral default has been one outcome: Russia, famously, shook financial markets when it defaulted on its domestic debt in 1998. Ecuador's similar default in 1999 did not rock the world, but it did cause economic pain at home. Another outcome of bond-based crises has been a rise in the scale of IMF lending, as the Fund has tried to provide cash to shore up confidence in troubled economies and to stop default. Mexico's rescue in 1995 worked; Argentina's bail-out this year has not.

The appeal of sovereign bankruptcy is that it may eliminate the need for huge IMF bail-outs, with their attendant risk of inciting reckless lending, and at the same time avoid the legal morass of unilateral default. In theory, both creditors and debtors would benefit from clear rules about the procedure for debt restructuring—so long as the rules strike a balance between the rights of debtors and creditors. A bankruptcy regime that is too lenient is sure to dry up inflows to emerging markets.

A bankruptcy regime that is too lenient is sure to dry up inflows to emerging markets

Putting all this into practice is hard. Many proposals on sovereign bankruptcy have gone nowhere, partly

because the details are devilishly tricky to work out. Simple parallels with domestic bankruptcy soon fall apart. Who, for instance, is the impartial adjudicator—the international equivalent of a domestic judge? The IMF is presumably best-equipped to decide whether a country's economic policies make sense, so it should play a central role. Yet the Fund is also a creditor, and an organisation with political masters. It will not be seen as impartial.

Another problem is how to ensure that a debtor country is negotiating in good faith, and actually pursuing sensible economic policies. Unlike a domestic bankruptcy judge, an international arbiter can hardly threaten to strip a country of its assets or forcibly change its “management”. And, unlike a company, a country's capacity to pay external creditors is often a matter of politics as much as economics.

These conceptual problems should not be insurmountable. But the bankruptcy idea is often dismissed as politically or legally infeasible in any event. The hurdles are certainly high. Creating a bankruptcy mechanism under the auspices of the IMF would entail a change in the Fund's articles of agreement, or maybe a change in the laws of all its member countries. In America, changing the Fund's articles would certainly require congressional assent. Congress would not easily be persuaded to sign on to a deal that overrode the sanctity of commercial contracts under American law.

Still, many other changes to the international system, such as forgiving the debts that deeply impoverished countries owe to the Fund and the World Bank, were long dismissed as infeasible; yet eventually they happened. Ms Krueger is surely right to suggest that there are better options than today's stark choice between bail-outs and chaotic default. Much will depend on what now happens in Argentina. The more painful, protracted and chaotic is Argentina's default, the greater the desire for changes to the system. Mr Cavallo acknowledged this week that a system for sovereign bankruptcy would “undoubtedly be useful”. It will sadly come too late for him.

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Suicide technologies

Exit this way

Dec 6th 2001
From The Economist print edition

For those who wish to end their lives at a time of their own choosing, technology may provide an answer

Get article background

DIANE PRETTY, a British woman paralysed by a fatal condition known as motor neuron disease, recently came close to death at the House of Lords. She wants to commit suicide but her paralysis means she needs help to end her life. Although English law, like that of many other countries, permits suicide, it punishes those who aid and abet the act. In early November, Mrs Pretty's lawyers went before the Lords, Britain's highest court, to argue that, as her doctors are unwilling to help her in this matter, her husband should be allowed to assist her suicide without fear of prosecution. On November 29th the Lords refused to give any such assurance, ruling that mercy-killing is murder all the same.

A few places—notably the Netherlands and Oregon—permit assisted suicide, but only if doctors are the ones lending a hand. Since the law offers scant relief to those looking for such an end, some right-to-die activists are trying to deal with the matter through new technologies that allow terminally ill patients to do the job themselves—reliably, and with minimal assistance from doctors or anybody else. At the moment, as Russel Ogden, a criminologist from Vancouver, points out, “home-made” attempts at assisted suicide by desperate patients and their friends and family often end in failure, leaving the patient in a worse condition than before.

Three years ago, Derek Humphry of the Euthanasia Research and Guidance Organisation in Eugene, Oregon, began to organise a loose coalition of right-to-die societies from across North America, Europe and Australia. The Self Deliverance New Technology Group (known as NuTech) includes a number of doctors, pharmacists and engineers who are busy coming up with suicide methods that provide a certain, painless and dignified death.

Drug overdoses fit the bill, but obtaining pharmaceuticals in the right form or quantity usually requires medical assistance, which even the most sympathetic doctors are often reluctant to provide. Indeed, John Ashcroft, America's attorney-general, has recently tried to close Oregon's assisted-suicide programme by instructing federal agents to clamp down on doctors prescribing federally regulated narcotics for such a purpose, although this challenge has been temporarily blocked by the courts.

The “DeBreather” was inspired by the dangers of diving

Some of NuTech's inspiration comes from diving, where death is always a danger. The group has come up with a device called the “DeBreather”, which consists of a face-mask attached to a plastic canister containing sodium hydroxide, plus an air collection bag. As a patient exhales through the mask, his breath travels into the canister, where the chemical “scrubs” the carbon dioxide from it. The air then travels to the collection bag and back into the mask, as the patient inhales. It is a rise in the concentration of carbon dioxide, not a depletion of oxygen levels, that triggers panic in someone who is asphyxiating, so the scrubbing fools the patient's body into thinking that the air is still breathable. Within minutes, however, he is inhaling almost oxygen-free air, which first knocks him unconscious, and then kills him.

An even simpler method relies on a plastic bag and an inert gas such as helium. Once a patient has

exhaled and put the bag over his head, it can be filled with helium, which displaces the air and achieves the same effect as the DeBreather, killing him in minutes. According to Mr Ogden, roughly 70 of 100 people known to have killed themselves with NuTech over the past 18 months have opted for the helium system. Instructional videos are sold on Amazon.com. Pro-euthanasia groups, such as Caring Friends, part of the Hemlock Society in America, will provide guidance (though not physical assistance) to make it work.

According to Mr Humphry, helium has several advantages. It is cheap and easy to obtain. Unlike carbon monoxide (a poisonous gas that is frequently employed by would-be suicides), it poses little physical risk to those who might assist. And it leaves no trace, so those who use it discreetly are unlikely to arouse suspicion from the prosecuting authorities.

Death down under

In Australia, meanwhile, Philip Nitschke (a doctor who helped four terminally ill people to die under the protection of a now-repealed law in that country's Northern Territory) is pushing NuTech in new directions. Much of his effort is going into developing a “suicide” pill that will produce a desirable death without using conventional pharmaceuticals or government-controlled narcotics.

Dr Nitschke and his colleagues are scouring the scientific literature for reports of easily obtained chemicals that have failed to make it into medicine because of their toxicity, but which might prove useful for self-destruction. For example, nicotine in high concentrations is a potent poison. Dr Nitschke's associates are studying the substance in the laboratory to see how it might be worked up as a suicide pill.

Similar efforts are under way with plant toxins, and with poisons extracted from shellfish and puffer fish. The aim is to come up with something that patients wishing to commit suicide can make themselves. The problem is that natural poisons are notoriously hard to produce in standard doses that will achieve the desired effect reliably. Dr Nitschke is also setting up a “contract” laboratory to which those making the substances themselves can send their samples for testing, to see how much of the active ingredient they contain. But he reckons it will be years before reliable, and desirable, suicide pills are available.

Of course, none of these technologies would solve the problem faced by Mrs Pretty, who will still need her family's help to end her suffering. And as long as such technologies have to be administered by others, they will be susceptible to abuse. But advocates of NuTech retort that this is all the more reason to legalise assisted suicide and bring it into the limelight. As Margaret Battin, a philosopher at the University of Utah, notes, by taking “reliable” assisted suicide out of the hands of doctors and putting it into those of patients and their friends and family, NuTech may prove a powerful force in reopening the debate on voluntary euthanasia around the world.

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AIDS drugs

Alternative therapy

Dec 6th 2001
From The Economist print edition

Cutting their drug doses may benefit AIDS patients

Get article background

SOME tentative good news has emerged for AIDS sufferers—or, at least, for the minority who can afford the drug treatment known as highly active anti-retroviral therapy (HAART). A preliminary study by Mark Dybul of America's National Institutes of Health and his colleagues, whose results have just been published in the *Proceedings of the National Academy of Sciences*, suggests that they might be able to cut the dosage they are taking by half without risking the return of symptoms.

HAART works by combining drugs that attack HIV, the virus that causes AIDS, at different points in its life cycle. This makes it harder for the virus to evolve around the therapy than it would be were a single drug used. Although HAART works well (as long as the complicated administration regime of the different drugs is scrupulously followed), it does bring some serious side-effects. These range from bodily deformities caused by the accumulation of fatty lumps to diabetes and heart disease. How these side-effects are caused is not known, but it seems likely that many are associated with a more direct side-effect of HAART, its tendency to raise cholesterol and fat levels in the blood.

One way to reduce side-effects (and also cut the cost of treatment) might be to use the drugs more sparingly. That has always been viewed as a high-risk strategy because HAART, despite early hopes, does not rid the body of HIV entirely. Although the virus disappears from the bloodstream, it lurks in "reservoirs" in other tissues, ready to leap back into action if the drugs are withdrawn. Such rebounds are likely to stimulate resistance, since they give HIV repeated opportunities to multiply in the presence of the drugs.

A bigger, follow-up trial will help determine the full implications

Despite this, some researchers have seen the rebound as an opportunity to try to induce the immune system to administer a sort of "auto-vaccination". The theory was that, if the application and withdrawal of HAART was fine-tuned to allow small bursts of viral replication, those bursts might act like a vaccine—giving the immune system enough exposure to HIV for it to learn to cope with the virus, without overwhelming it. That theory does not seem to work. But the trials have suggested that stopping and starting HAART under controlled conditions may not always lead to the emergence of resistance.

On the basis of these studies, Dr Dybul estimated that a patient could probably go seven days without the drugs with no ill effects. So he tested the consequences of taking people on and off HAART on alternate weeks. Although the trial was small (only ten people) all those who complied with the instructions kept the virus suppressed in their bloodstreams as effectively as if they had been on the drugs continuously. More pertinently, their immune systems remained in as good a shape as they would otherwise have been. (This was not true of the two who disobeyed the regime and spent periods of 10 and 21 days off the drugs.) On top of that, levels of cholesterol and fat in the blood of the participants fell significantly.

Such a study is, of course, but a straw in the wind. It was small, relatively short, and had no control groups on other drug-regimes to compare with. But it is significant enough for Dr Dybul to have begun a bigger, follow-up trial.

It also opens up the intriguing possibility of cutting the cost of HAART by half. That cost is now as high as $15,000 a year—pricey enough in a rich country, but prohibitive in Africa, where most AIDS-sufferers dwell. Although several drug companies have agreed to supply the drugs to African countries at

manufacturing cost (the price in the rich world factors in development costs as well), that is still beyond the purse of any but the middle classes in Africa. Cutting the amount of drugs needed by half would increase the number of people who could afford them. It would also reduce the practice of taking HAART irregularly, as money permits, which is a near-cast-iron way of causing resistant strains of HIV to evolve.

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Personal transport

Is that IT?

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An invention that will "revolutionise" transport has been unveiled

Reuters

Look Ma, no hands

IN SOME quarters, it was hailed as a revolutionary advance in personal transport, with the potential even to replace the car. The electrically driven, single-rider device from a noted inventor would cut pollution and herald the dawn of a new era of transport. The date was 1985: the product, an electric "tricycle", the Sinclair C5.

This week an electric, two-wheeled "scooter" called the Segway Human Transporter was unveiled with similar fanfare. It weighs 36kg, travels at a maximum speed of 20km an hour, and has a range of 27km on a single charge of its battery.

For all the fuss made so far about this device—also known as Ginger or "IT"—its main innovation is a prosaic one: its ability to stay upright. It does this by using a set of five sensors that measure its motion in all three dimensions, and also its angle of tilt to the horizontal. These sensors report their results to a computer that controls the wheels 100 times a second, and the wheels then move so as to keep the platform level.

Thus, when Segway tilts forward, the wheels turn faster to stop it toppling over. If the forward movement is too rapid, they slow down, or even go into reverse. This means that Segway can move over rough terrain, travel up low kerbs and even follow its rider up a staircase like a faithful hound. Riders will, though, fall off if they hit a high enough kerb. And Segway has no brakes.

Is this really "the first real improvement on walking since the invention of the sandal"?

Dean Kamen, Segway's inventor, is not exactly modest about his device. He claims it is "the first real improvement on walking since the invention of the sandal". Where the wheel, the bicycle, the car and the roller-skate fit into Dr Kamen's world view is unclear.

Segway may prove popular for getting around airports, warehouses and museums, or for stealing bags and snatching wallets. But whether it will become the mass-market device that its inventor hopes remains to be seen. It is open to the elements, the rider has to stand and (horror) there is nowhere to put the stereo and sub-woofer systems. The retail version should be available late next year and is likely to cost $3,000. Or you could buy a second-hand C5.

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Acoustics and marine life

Watery graves

Dec 6th 2001
From The Economist print edition

Attempts to help manatees by slowing down boats may make things worse

Don't have a sea cow, man

SOME people find the eerie noises made by whales soothing. Unfortunately, the feeling is not always mutual. Boats with engines that are too loud can cause temporary hearing loss in some marine mammals. Those with softer engines are difficult to detect and dodge.

Manatees (also known as sea cows or sirens) are at particular risk. Each year, propellers kill 70-80 of these animals in Florida alone. Hundreds more bear multiple scars from near-misses. At a meeting of the Acoustical Society of America held in Fort Lauderdale, Edmund Gerstein and Joseph Blue of Leviathan Legacy, a Florida consulting firm, explained how manatees respond to approaching boats.

The researchers trained a pair of manatees in a zoo to listen to an underwater loudspeaker, and then recorded the animals' reactions to various types of noise. Manatees are best able to hear sounds at frequencies of around 16-18 kHz. Boat-engine noise is much lower—around 1kHz. When the loudspeaker played a recording of some boats against an ordinary amount of background noise, Dr Gerstein and Dr Blue found that their manatees could not discern them.

Ironically, well-meaning proposals to create “slow speed” zones for boats in areas inhabited by manatees may have exacerbated the problem. The more slowly a boat moves, the lower the volume and frequency of the sound it generates, and the more difficult it is for a manatee to hear. The researchers found that, on average, a manatee can hear a boat moving at 5km an hour only when it is some 3-5 metres from the boat's propellers. That is a little too close for comfort. If a boat is travelling at 40km an hour, a manatee can detect it when it is more than 200 metres away.

Other acoustical phenomena also conspire to make oncoming boats hard to hear, especially at the surface, where marine mammals are particularly at risk. Large vessels generate low-frequency sound waves. When these waves bounce off the “ceiling” of the ocean's surface, they are reflected back into the water a half-cycle out of phase. The incident and reflected sound waves therefore cancel each other out in the band of water nearest the surface. That makes it hard for an animal swimming there to hear a ship until it is too close to escape from.

Large boats are made still more hazardous by a phenomenon called “acoustical shadowing”. The sound produced by a propeller behind the bulk of a boat is blocked in the area directly in front it. A startled animal swimming near a noisy boat may dodge into this silent zone for refuge—only to be mown down as the boat ploughs forward.

Dr Gerstein and Dr Blue, however, think they can overcome this problem. They have designed a device a few centimetres across that can be fitted on to the hull of a vessel, to emit a sound in the direction of its movement. The device generates a sound in the frequency range that manatees are best adapted to hear, so it should encourage them to steer clear. A sort of siren for sirens, as it were.

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About sponsorship

Brazilian art

Consuming passions

Dec 6th 2001
From The Economist print edition

Brazil conjures up images of colour, physicality and flair—but rarely of art. A series of international exhibitions is changing that perception

ART makes a great ambassador, as Brazil is discovering. A year-long exhibition named “Rediscovery”, marking the 500th anniversary of Brazil's discovery by a Portuguese explorer, Pedro Alvares Cabral, attracted more than 3m visitors in Sao Paulo in 2000. Nearly two years on, offshoots of that show are sambaing their way around the world, to New York, London and more than ten other destinations, in an effort to show the rest of us what we have been missing.

The shows are sponsored by BrasilConnects, a private not-for-profit foundation set up by the president of Banco Santos, Edemar Cid Ferreira, to promote Brazilian culture around the world. “Rediscovery”, for which BrasilConnects raised $30m, bolstered the foundation's confidence as well as its ambitions. “We're a group of fanatic people,” says Emilio Kalil, BrasilConnects' artistic director, “working together to promote Brazilian culture abroad.”

The most important of the new shows is a $6m blockbuster at the Guggenheim Museum in New York, which will transfer to Bilbao in mid-2002. Jean Nouvel, a French architect who this year won the RIBA gold medal, has designed a space in which Brazilian art glows in the dark, like the red Brazilwood that resembles the *brasas* or red embers for which Brazil was named. Mr Nouvel has painted the Frank Lloyd Wright rotunda black, transforming it into a theatrical showcase for the four-storey, gilded altar from the monastery of Sao Bento in Olinda, a town near Recife. A masterpiece of the Brazilian baroque, the altar serves as an icon connecting Brazil's exuberant heritage with the sensuous dynamism of its 20th-century art.

Viewers walk up the Guggenheim's spiral ramp as though it were a processional route. Once inside, they don't so much survey the panoply of Brazil's art as submit to the interaction of Afro-Euro-Brazilian influences—what one of the show's curators, Germano Celant, calls the orgy of moods—that make up so much of the nation's polymorphous visual culture.

From baroque ritual to performance art, Brazilian art blends the carnal and the spiritual, focusing heavily on the bodily experience. In the late 1920s, Tarsila do Amaral, a painter, and her husband, Osvaldo de Andrade, a writer, essayist and art critic, coined the term, anthropophagy, which they saw as a way of constructing a cultural identity by cannibalising other cultures without losing your individuality. Although she studied with Fernand Léger in Paris, Amaral was one of the first artists of her generation to rediscover the baroque heritage of Brazil's Minas Gerais region and to explore indigenous folklore. She incorporated Cubist techniques into her tropical palette and created a new image of *Brasilidad*, as can be seen in the iconic paintings at the Guggenheim.

Cannibalism has fascinated visitors to Brazil ever since Hans Staden, an explorer, escaped a Tupinamba stew pot in the 16th century. Indeed, cannibalism continues to be read on many levels as a metaphor for Brazilian art. It was the theme of the 2000 Sao Paulo Bienal, where Lygia Pape made a stunning work called “Tupinamba Cloak”, also on display at the Guggenheim. Her work offers a visual re-reading of the history of a famous 17th-century cape, made of red ibis feathers, which was said to transform its shamanic wearer into a birdman. Ms Pape's tribal garment has red cloth filled with feather-covered balls extruding body parts and surrounded by insects. The message of this remarkable work seems to be that while the country strives to reach the stature of a mythical bird, the everyday reality of indigenous peoples is little better than that of insects.

Helio Oiticica, who died in 1980, is another artist whose work can be seen at the Guggenheim. A modern shaman of Brazilian art, he was a kind of Andy Warhol in reverse. Oiticica was not concerned with material culture so much as the ways that performance, playfulness and ritual define Brazil's visual landscape. As a tribute to the people of the *favelas*, who refused to let poverty or adversity stop them dancing the samba and performing their religious rituals, he liked to create flamboyantly coloured *parangoles*—capes, flags and banners that were meant to be worn in a collective dance in which participants would complete the art work. Oiticica's friend and fellow artist, Lygia Clark, even went so far as to incorporate his ideas into a new kind of psychotherapy in which patients wore interactive art pieces that took them outside themselves.

None of the smaller shows can really compete with the Guggenheim for richness or depth. Nevertheless, they do give a flavour of Brazil's artistic wealth. “Experiment Experiencia” at the Museum of Modern Art in Oxford attracted a record 40,000 visitors this autumn to see small-scale works by some of the great names of Brazilian modernism, including Ms Pape, Oiticica and Clark. Similar work, with a more contemporary slant, is on display at New York's Museo del Barrio. Meanwhile, the Ashmolean Museum, also in Oxford, has a tiny show of Brazilian baroque art, including expressive wood carvings by a legendary 18th-century mulatto sculptor who was nicknamed O Aleijadinho, the Little Cripple, because in later life he became so disfigured by disease that his assistants had to strap his tools to his wrists.

The real eye-opener, however, is the British Museum's “Unknown Amazon”, which fuses archaeology, anthropology and ecology to present a picture of the lost civilisations of the Amazon basin. Conventional wisdom has it that the Portuguese discovered a virgin territory, with few native peoples; certainly not the population of as many as 11m with their large-scale agricultural settlements, sophisticated language and religion which has come to light recently through archaeological remains. This fascinating exhibition—like the Guggenheim display—shows how art and archaeology can be at the Janus-face of culture, looking both back in time to ancient Indian civilisations and forward to the Brazil of today, and even tomorrow.

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Brazil: Body and Soul. *Guggenheim, New York;* to January 27th. *Guggenheim, Bilbao;* from mid-2002 (dates to be confirmed).

The Thread Unravelled: Contemporary Brazilian Art. *El Museo del Barrio, New York;* to February 3rd.

Unknown Amazon. *British Museum, London;* to April 1st.

Opulence and Devotion: Brazilian Baroque Art. *Ashmolean Museum, Oxford;* to February 3rd.

More information at BrasilConnects

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About sponsorship

After September 11th

Hot metal

Dec 6th 2001
From The Economist print edition

THERE is still no general agreement about the significance of September 11th, even among wholehearted supporters of armed action against the perpetrators. Some people have been quick to see in the atrocity proof that Islam and the West are condemned to fight each other in a clash of civilisations that began before the crusades and is now merely entering a ferocious new phase.

Others, including Fred Halliday, professor of international relations at the London School of Economics, reject this Huntingtonian view. Most Muslims, he stresses in this book, are not even Islamists, let alone supporters—far less practitioners—of terror. And not all terrorists are Islamists: indeed, the expression was coined during the French Revolution to describe a means of deploying state power against rebellious subjects.

Two Hours That Shook the World: September 11, 2001: Causes and Consequences
By Fred Halliday

To be distributed in America in February by Palgrave; $17.95
Saqi Books; 256 pages; £12.95.

Buy it at
Amazon.com
Amazon.co.uk
Amazon.co.uk

Nor, he believes, are the goals of groups such as al-Qaeda primarily religious or cultural, but political—and they are not to be found in the West, but at home. The main target of the attacks, he says, is not American power or “a somewhat carelessly defined ‘civilised' or ‘democratic' world”, but the states of the Middle East themselves. The important battle is not between civilisations but within Islam, between the modernising secularists and the fundamentalists. America has taken the side of the modernisers, and so became a target.

However, there are other factors. September 11th, Mr Halliday notes, was the first time since 1492 that the south—the poor world or the world of the dispossessed—had landed a punch on the north, on the north's home territory at least. Resentment bred by colonialism and the chaotic legacy of the cold war both contributed to what happened.

Mr Halliday has been hot off the mark in producing this contribution to the debate about an event whose consequences, he maintains, will still be felt in 100 years' time. Much of the book was written before September 11th. But there is plenty of good reportage here, and a number of supporting documents, including al-Qaeda's founding statement, the 1999 Tashkent declaration on the future of Afghanistan and a couple of UN resolutions, including the one condemning the September 11th attack. The book is worth reading too, for the occasional nugget that tells you more in a sentence than a whole chapter can—such as Saddam Hussein's explanation of his approach to life's reversals: “When a cat annoys you, you don't pull its tail. You cut its head off.”

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About sponsorship

Record companies

Jazz messenger

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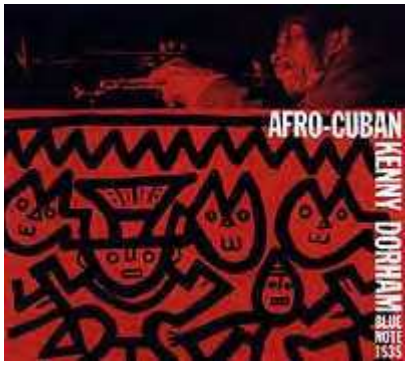
INDIVIDUALITY is the essence of jazz, and it may be the key to jazz recording too. Certainly, the Blue Note label, which Richard Cook deems “the most renowned and admired jazz-recording operation there has ever been”, reflected one man's passion. In 1939, a German immigrant, Alfred Lion, began to produce discs by jazzmen simply because he loved their music. Over the next 30 years, Lion and his partner, Francis Wolff, who shot many Blue Note sleeves, built up a stunning catalogue of classic albums, working on a shoestring and that same principle of personal commitment.



Blue Note Records: The Biography
By Richard Cook

Secker & Warburg; 276 pages; £16.99

Buy it at
Amazon.co.uk

Lion's taste was as extraordinary as his enthusiasm. He liked jazz “with a feeling”, which for him encompassed boogie-woogie pianists, such traditional masters as Sidney Bechet, and the modernist idiosyncracies of Thelonious Monk. Perhaps closest to his heart was the blend of sophistication and funky drive which characterised two of Blue Note's most successful attractions, Horace Silver and Art Blakey's Jazz Messengers. All the label's musicians appreciated the respect Lion and Wolff accorded them, and congenial recording conditions encouraged optimum results.

Blue Note's best years were the 1950s and early 1960s, when jazz was popular with a small but hip urban audience. Mr Cook charts the label's achievements, and the confidence of jazz before the arrival of “the idea of instant disposability, which would come to be an integral part of pop culture”. Indeed, jazz may have even been too confident. Certainly its avant-garde developments left listeners behind, even if the critics approved. In Mr Cook's words, Blue Note's later albums pointed up the “disconcerting paradox in the new jazz: the better it was, the less people liked it.”

Blue Note's ultimate crisis, oddly, was not caused by dwindling sales, but by a hit. An infectious, dance-style album called “The Sidewinder” sold so many copies that Lion was overwhelmed by consumer demand. To ease the situation, he agreed to a takeover by a larger operation, Liberty Records. Though he was still in charge, the pressure of corporate rules and procedures exhausted him, and he retired from Blue Note in 1967. Wolff carried on, but the new age of rock and pop was sweeping all before it, and when he died in 1971, the label was in deep trouble. It tried to keep going, pandering to jazz-rock cross-over—which Mr Cook describes as “that refuge for marketing scoundrels everywhere”—but by 1979 Blue Note was in effect finished.

Since then, its fortunes have somewhat revived, thanks largely to CD reissues of its classic back catalogue. And it still produces new recordings, though today's jazz climate is precarious and Blue Note is just a tiny part of the vast EMI empire. As the label's old recording engineer puts it, “It's another world, another kind of business”—well chronicled in Mr Cook's tale of artistic vision and changing times.

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Books-in-brief

A time for feasts

Dec 6th 2001
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BOOKS IN BRIEF

Greed, idealism and conflicting dreams fill these histories of food

A FULL meal is like life itself, beginning with the starter (childhood), passing to main courses (growth and middle age) and ending with the pudding and the coffee, a sign to get up from the table. The authors, specialists in the literature of gastronomy, have gathered together a wide range of pictorial descriptions of the preparation and enjoyment of food—from outdoor markets to confectioners' kitchens, meaty still lifes of the larder and well-laid tables—in a celebration that will delight and astonish by turns.

Food Mania: An Extraordinary Visual Record of the Art of Food
By Nigel Garwood and Rainer Voigt

Thames & Hudson; £16.95
Clarkson Potter; 400 pages; $35.

Buy it at
Amazon.com
Amazon.co.uk

THE demand for cowhide to supply people with saddles, wineskins and riding gear led to a glut of cheap meat in early modern Europe, which is why in 16th-century Genoa it was more expensive to buy two heads of cabbage than a hunk of beef. Meanwhile, northern Europeans digest milk much better than their southern counterparts, which allows them to absorb calcium despite the lack of vitamin D from the sun. These and other thought-provoking theories make this slim volume by a history professor at the University of Genoa more than just another collection of past culinary oddities.

Culture of the Fork: A Brief History of Food in Europe
By Giovanni Rebora (translated by Albert Sonnenfeld)

Columbia University Press; 196 pages; $24.95 and £17.50

Buy it at
Amazon.com
Amazon.co.uk

WRITTEN as a holiday task while he was hard at work on an earlier book, “Civilizations”, Felipe Fernandez-Armesto's culinary survey takes us through what he calls the eight great revolutions in the history of food: cooking with fire, the ritualisation of eating, the development of herding, the invention of agriculture, food as an indicator of rank, long-range transmission of food, global exchanges of plants and livestock, and the industrialisation of food production and delivery. A breathless tour of everything and everyone culinary, from J.H. Kellogg—who promoted eating roughage as a way of curbing sexual desire—through cannibalism. A chunky book that will leave you well and truly sated.

Food: A History
By Felipe Fernandez-Armesto

Macmillan; 304 pages; £20

Buy it at
Amazon.co.uk

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About sponsorship

The year's best jazz CDs

Hours of pleasure

Dec 6th 2001
From The Economist print edition

Put any of these on your Xmas wishlist

Simply the best

DESPITE gloomy proclamations of the decline of jazz, there is an abundance of it about, and plenty of new CDs to provide a bumper end-year season for jazz fans. Even those that celebrate the giants of the past convey a perennial vitality. A gala ten-CD box, for instance, enshrines all the recordings made for Columbia by the peerless Billie Holiday, regarded by many critics as the greatest of all jazz singers ("Lady Day: The Complete Billie Holiday", Columbia CXK85470).

When Lady Day died in 1959 at the age of 44, her voice was a ghostly whisper. But the buoyant genius of her early years is preserved in the discs she made between 1933-44. Here she is at the top of her or anybody's game, phrasing with uncanny swing and transforming ordinary pop tunes into classics, perfectly at home with some of the most illustrious names in jazz history—Teddy Wilson, Benny Goodman and, most affectingly, her tenor saxophonist friend, Lester Young. Columbia's mega-set comprises 230 tracks, some available for the first time, photographs and essays—a worthy tribute to a superb artist in her prime. For those wishing for something less exhaustive, there is a two-CD compilation of items from the set ("Lady Day: The Best of Billie Holiday", Columbia/Legacy COL 5047222).

Two of those performances feature a clarinettist, Artie Shaw, who became an immense swing-era star in his own right. Indeed, he rivalled his fellow clarinettist, Benny Goodman, for the title of King of Swing, with a consummate solo style and a band that had a string of hit records, including "Begin the Beguine" and "Stardust". Mr Shaw was known as a restless experimenter, never content to turn success into a formula: typically, he added a string section to his big band and used a harpsichord in his small group. Most controversially, he simply walked out on stardom, abruptly disbanding several times and finally giving up playing altogether in 1954. Still thriving at the age of 91, Mr Shaw has overseen a five-CD set of the high points of his musical career, confirming, as he says in an accompanying essay, that he "created a good-sized chunk of durable Americana" ("Artie Shaw: Self Portrait", BMG Bluebird 9026-63808).

Increasingly, however, jazz has found notable exponents outside America. Fans of contemporary big bands will applaud the work of a British-based Zimbabwean composer, Mike Gibbs, on a new CD called "Nonsequence" (Provocateur PVC 1027), performed by the NDR Big Band of Hamburg and an American unit in New York. Mr Gibbs deftly combines the idioms of jazz, rock and African music in a programme of originals and a droll reworking of Glenn Miller's "Moonlight Serenade".

Japan has an avid jazz audience and a native star in Keiko Lee. This year, her talents have received wider recognition with the release of a Columbia CD in America. Though its title, "New York State of Mind", has taken on a special poignancy, Miss Lee has been praised for her compelling singing and lucid piano (Columbia, 5033752).

She has a way to go, though, to catch up with the latest jazz vocal superstar, Diana Krall, a Canadian. Miss Krall began as a pianist, with singing as a sideline, but her sultry sound and blonde glamour have taken her to heights of celebrity that jazz talents seldom reach. Her CD "The Look of Love" (Verve 549 846-2) offers amorous ballads swathed in strings, and while it is very attractive, jazz fans are worrying they may lose Miss Krall to the mass market. But for solace they can turn to the fresh new voice of Jane Monheit. Just 24, with a magnificent mezzo-soprano, she has already won plaudits for her musicality, exuberant swing and interpretative passion—all displayed on her CD "Come Dream with Me" (N-Coded

Music, NC 4219-2).

The basis of any singer's repertoire is the stock of great popular songs known as standards. They have also inspired one of the best jazz pianists, Keith Jarrett, who formed his “Standards Trio” with two fellow virtuosos, Gary Peacock, a bassist, and a drummer, Jack DeJohnette, to explore such evergreen material. Their most recent disc, “Inside Out” (ECM 1780), however, is devoted not to tunes but to free improvisation. While their interplay is fascinating, the high point of the record may be the sudden appearance of the old standard, “When I Fall in Love”.

Finally, it is heartening to any jazz fan to see young musicians acknowledging and extending their heritage. The New Orleans Legacy Ensemble, an 11-piece group hailing from the birthplace of jazz, is dedicated to playing in a contemporary style still rooted in a driving, bluesy idiom. The title of their CD, “Spirits of Congo Square” (Candid 79759), encapsulates their purpose, and their music is full of the timeless Crescent City strut.

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Tiger Woods

Burning bright

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WHETHER Eldrick (Tiger) Woods is the best golfer ever is an intriguing but unanswerable question. Equipment changes, so do courses and so, too, does the standard of rival players. David Owen, a staff writer for the *New Yorker*, is far more interested in the impact his young, gifted and articulate subject has had on a sport that has suffered for decades from its reputation in America as a country-club game for middle-aged Republicans with too much time on their hands.

AP

Spirit level

The Chosen One: Tiger Woods and the Dilemma of Greatness
By David Owen

Simon & Schuster; 208 pages; $21

Buy it at
Amazon.com
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As the only man simultaneously to have held the four major championships—the Masters, the American Open, the British Open and the PGA—the magnetic Mr Woods has already extended golf's appeal beyond affluent suburbanites, although it is fanciful to imagine many poorer folk affording costly club memberships, and green and buggy fees. He is unquestionably the finest player of our day and Mr Owen is persuasive when he argues that this status carries more weight in golf than in other games.

Most golf fans are also players. Ordinary hackers outfit themselves with the clubs and balls and shoes and copper wristbands of their favourite pros in the hope that a little of the magic will rub off on them. More important, their heroes also inspire their approach to the game and, as Mr Owen tells it, they could not have a finer role model than Mr Woods. He is known occasionally to swear, but otherwise he is a clean-living sportsman who works out with weights when he is not perfecting his craft on the golf course. His father is a lay preacher in a black Baptist church. His Asian mother is also a deeply spiritual person and raised her dutiful son to respect the Buddhist tradition.

For his fellow tour professionals, it is all a bit much. The prodigy's successes have spurred the keenest of them to spend more time in the gym, eat healthier foods and go to bed earlier at night, but they sometimes silently resent it.

Gone forever, it sometimes seems, are the carefree days when a chain-smoking Arnold Palmer could cadge cigarettes off reporters in the gallery and still win majors. Or when a tubby player nicknamed the Walrus for his drooping moustache and lumbering girth could take the green jacket at the Masters, as Craig Stadler did in the 1980s. Which raises another intriguing but unanswerable question. Jack Nicklaus is not a fitness fanatic, and as a young golfer was notoriously unfit, yet over nearly four decades he has nonetheless won 18 major titles. How many more would he have won if he trained as hard and lived as clean as Tiger?

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About sponsorship

George Harrison

Dec 6th 2001
From The Economist print edition

George Harrison, a Beatle, died on November 29th, aged 58

AP

SO MUCH has been written and broadcast about the death of George Harrison that it might be thought that there was nothing left to say. But to hazard such a rash prediction would be to underestimate the resourcefulness of what might be called the Beatles generation, now steeped in melancholy. This may prove to be a long goodbye. The large sections of newspapers that have been devoted to Mr Harrison's career could be merely the opening bars of a requiem. Already there is talk of biographies and memorial record albums, along with television and radio retrospectives and perhaps a film.

Those who were not even born in the 1960s, when the Beatles were at their most active, may have been surprised that, to take a random example, the *Daily Telegraph*, a London newspaper that prides itself on the quality of its readership, should have cleared its front page of other news to report Mr Harrison's death, continuing the saga inside for five more pages. Other British newspapers were equally proliferative. American and European newspapers were more restrained, but generous in their treatment of the famous Brit. Not since the death of Princess Diana, and before that of Churchill, had there been so many tears in print.

Still, the young are mostly tolerant of the eccentricities of the middle-aged. Those who had once courted and cuddled to the music of the Beatles and now ran the media were entitled to their harmless indulgence. The death of Mr Harrison seemed also the death of their era. When it was proposed that a minute's silence should be observed no one objected even though such an obsequy is normally reserved for the war dead. After all, it wasn't often that an era died.

It may seem odd that the same vast coverage was not given to the death in 1980 of John Lennon, the founder Beatle. But Lennon was shot dead. The reporting was extensive, but hurriedly put together. George Harrison had been ill for a long time. By the time he died the essays on his life by his admirers had been written and polished. Mostly they were moving, although perhaps avoiding Voltaire's dictum that “to the dead we owe only truth”.

Never again

The story of George Harrison's life can be simply told. He was a busman's son who left school at 14 and worked briefly as an electrician's mate. He won a place in John Lennon's little group in Liverpool because he played the guitar a bit better than either Lennon or Paul McCartney. He has been called the “quiet Beatle”; perhaps shy is a more accurate adjective. He found it difficult to cope with the publicity that underpinned the Beatles' success, and for a dark period in his life was addicted to drugs. Like the other Beatles he made huge amounts of money. He bought a house with 120 rooms, and shut himself away from the screaming fans saying, “I would never want that again.” The British film industry was grateful to him for backing several productions during one of its customary hard-up periods, among them “Monty Python's Life of Brian”. He was married twice. Of Mr Harrison's songs perhaps “Something” is the best known. Frank Sinatra thought it great.

A mixed life, but a better one perhaps than mending fuses. He had luck, just as the Beatles had luck. Their luck started when they were taken over by Brian Epstein, who ran a record shop in Liverpool near the Cavern Club, where the Beatles were regularly performing. The role of Epstein has tended to be

minimised in the golden memory of the Beatles, perhaps because he was thought to be too fond of young men. But Epstein was the one who groomed the Beatles to look cuddly rather than rough, to brush their hair and to wear neat suits rather than leather.

In 1962, after two years spent hawking their demo tapes around reluctant record companies who said that guitar groups were finished, he got the Beatles their first big deal. Epstein said he would make them “bigger than Elvis”, and so he did. By the mid-1960s they were the most important pop group in Europe and the United States. Any Beatles memorabilia from that time tends to become a museum piece. A few days before Mr Harrison died his first guitar, bought for pennies, drew a bid at an auction in London of £25,000 ($35,500). After Epstein died in 1967 the group began to break up with its members going their own way, sometimes as soloists, sometimes forming new groups, sometimes doing not much. George Harrison for one said he was tired of going “round and round the world singing the same ten dopey tunes”.

A talent for publicity cannot in itself explain why they did so well. And musically they have probably been overpraised. Epstein managed other groups, among them Gerry and the Pacemakers, but although successful they never matched the appeal of the Beatles. Nor did the Rolling Stones with their pastiche of American blues, although some preferred their fiercer music. To use an expression that flourished in the 1960s, it seems that the Beatles more than other groups caught the *Zeitgeist*, the spirit of the age. “All You Need is Love”, declaimed against a pounding background of cellos, could be hypnotically compelling, although hardly a message of Voltairian truth.

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Overview

Dec 6th 2001
From The Economist print edition

In **America**, the National Association of Purchasing Management's index of manufacturing activity rose to 44.5 in November, a stronger-than-expected gain. The sharp rebound from the ten-year low of a month earlier sparked hopes for a quick end to the recession. However, a NAPM reading below 50 still indicates contraction.

Revised figures show that America's GDP shrank at an annual rate of 1.1% in the third quarter, compared with the previously reported decline of 0.4%. Consumer spending rose at an annual rate of 1.1% in the third quarter, the weakest increase since 1993. Yet optimists, sensing an end to the recession, drove the Dow Jones above 10,000 for the first time since early September.

The **euro area**'s GDP inched up in the third quarter by 0.1%. Inflationary pressures are also easing: in the year to October, producer prices fell by 0.6% in the euro area, by 1.6% in France and by 0.6% in Italy. But business may be improving: the Reuters euro-area business-activity index rose slightly to 46.9 in November, up from 46.7 in October. Retail sales were up by 1.8% in the year to September.

Despite stronger-than-expected GDP growth in the third quarter of 4.6% at an annual rate, **Australia**'s central bank cut interest rates by a quarter-point to 4.25%, which is a 30-year low.

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Output, demand and jobs

Dec 6th 2001
From The Economist print edition

% change at annual rate

	GDP		The Economist poll GDP forecasts		Industrial production	Retail sales (volume)	Unemployment % rate	
	1 qtr	1 year	2001	2002	latest	latest	latest	year ago
Australia	+ 4.6	+ 2.5 Q3	+ 2.1	+ 3.2	– 0.4 Q2	+ 5.8 Q3	7.1 Oct	6.0
Austria	+ 0.2	+ 1.2 Q2	+ 1.4	+ 1.1	– 5.9 Sep	+ 1.2 Aug	4.0 Oct	3.5
Belgium	– 1.2	+ 0.9 Q3	+ 1.3	+ 1.1	– 2.3 Sep*	+ 3.4 Sep	11.7 Sep*	11.5
Britain	+ 2.1	+ 2.1 Q3	+ 2.2	+ 1.7	– 4.2 Oct	+ 5.7 Oct	5.1 Sep†	5.4
Canada	– 0.8	+ 0.8 Q3	+ 1.4	+ 1.2	– 5.7 Sep**	+ 3.5 Jun	7.3 Oct	6.9
Denmark	+ 3.5	+ 1.4 Q3	+ 1.2	+ 1.3	– 3.2 Sep	– 0.5 Aug	5.0 Sep	5.5
France	+ 1.9	+ 2.0 Q3	+ 2.0	+ 1.2	+ 1.0 Sep	– 1.2 Sep	8.9 Oct	9.2
Germany	– 0.6	+ 0.3 Q3	+ 0.7	+ 0.7	– 2.6 Sep	– 2.1 Sep	9.5 Nov††	9.3
Italy	+ 0.6	+ 1.9 Q3	+ 1.8	+ 1.1	– 4.3 Sep	– 2.1 Sep	9.4 Jul	10.5
Japan	– 2.9	– 0.7 Q2	– 0.6	– 0.8	–11.9 Oct	– 2.5 Sep	5.4 Oct	4.7
Netherlands	– 1.4	+ 0.4 Q3	+ 1.0	+ 1.1	– 2.2 Sep	+ 2.3 Aug	2.0 Oct§	2.6
Spain	+ 1.9	+ 2.9 Q2	+ 2.6	+ 1.8	– 2.5 Sep	na	12.9 Oct	13.6
Sweden	+ 0.8	+ 1.1 Q2	+ 1.6	+ 1.6	– 2.4 Sep	+ 4.3 Sep	4.0 Oct*	4.0
Switzerland	+ 1.7	+ 2.0 Q2	+ 1.6	+ 0.9	+ 4.2 Q2*	+ 1.7 Sep	1.9 Oct*	1.7
United States	– 1.1	+ 0.6 Q3	+ 1.0	+ 0.6	– 6.4 Oct	+ 8.9 Oct	5.4 Oct	3.9
Euro area	+ 0.4	+ 1.3 Q3	+ 1.5	+ 1.0	– 0.6 Sep	+ 1.8 Sep	8.4 Oct	8.5
MORE COUNTRIES	Data for the countries below are not provided in printed editions of *The Economist*							
Finland	– 6.7	+ 0.4 Q2	na	na	– 6.2 Oct	+ 3.8 Aug	8.9 Oct*	8.9
Greece	+ 2.8	+ 4.9 Q2	na	na	+ 2.6 Sep*	+ 8.3 Jul	na	na
Iceland	na	+ 3.62000	na	na	+ 2.5 2000	na	1.4 Sep	1.2
Ireland	na	+ 9.2 Q2	na	na	+ 5.2 Sep*	+ 1.4 Sep	3.9 Oct	3.7
Luxembourg	na	+ 8.52000	na	na	– 3.0 Aug*	+ 9.5 Aug	2.5 Sep	2.6
New Zealand	+ 7.4	+ 2.8 Q2	na	na	+ 3.5 Q2*	+ 6.3 Q3	5.2 Q3	5.8
Norway	+ 0.5	+ 1.4 Q2	na	na	+ 1.9 Sep*	+ 3.7 Oct	3.6 Q3	3.5
Portugal	+ 1.6	+ 2.5 Q2	na	na	– 0.2 Sep*	+ 3.9 Sep	4.0 Q3	4.0

*Not seasonally adjusted. †Jul-Sep; claimant count rate 3.2% in Oct. §Aug-Oct. **New series. ††EU harmonised rate 8.0% in Nov.

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Prices and wages

Dec 6th 2001
From The Economist print edition

% change at annual rate

	Consumer prices* latest		Consumer prices* year ago	The Economist poll consumer prices forecast 2001	The Economist poll consumer prices forecast 2002	Producer prices* latest		Producer prices* year ago	Wages/earnings latest		Wages/earnings year ago
Australia	+ 2.5	Q3	+ 6.1	+ 4.2	+ 2.4	+ 2.4	Q3	+ 7.2	+ 3.6	Q3	+ 6.5
Austria	+ 2.6	Oct	+ 2.8	+ 2.5	+ 1.5	– 0.5	Oct	+ 6.0	+ 2.8	Oct	+ 2.0
Belgium	+ 2.1	Nov	+ 3.1	+ 2.5	+ 1.6	– 0.2	Sep	+10.8	+ 3.7	Q3	+ 1.4
Britain	+ 1.6	Oct	+ 3.1	+ 2.0	+ 2.1	– 0.6	Oct	+ 2.7	+ 4.4	Sep	+ 4.1
Canada	+ 1.9	Oct	+ 2.8	+ 2.6	+ 1.7	– 1.0	Oct	+ 4.8	+ 2.3	Sep	+ 3.5
Denmark	+ 2.2	Oct	+ 2.7	+ 2.3	+ 1.9	– 0.3	Oct	+ 6.9	+ 4.3	Q3	+ 3.8
France	+ 1.8	Oct	+ 1.9	+ 1.7	+ 1.2	– 1.6	Oct	+ 6.8	+ 4.2	Q2	+ 5.4
Germany	+ 1.7	Nov	+ 2.4	+ 2.5	+ 1.2	– 1.1	Oct	+ 7.4	+ 2.3	Sep	+ 2.1
Italy	+ 2.4	Nov	+ 2.7	+ 2.7	+ 1.6	– 0.6	Oct	+ 6.8	+ 2.5	Oct*	+ 1.8
Japan	– 0.8	Oct	– 1.1	– 0.7	– 0.8	– 0.5	Oct	+ 0.3	– 0.5	Oct*	+ 1.4
Netherlands	+ 4.3	Oct	+ 3.1	+ 4.7	+ 2.1	– 0.9	Oct	+ 9.2	+ 4.6	Oct	+ 3.3
Spain	+ 3.0	Oct	+ 4.0	+ 3.7	+ 2.3	– 0.4	Oct	+ 5.9	+ 2.9	Q2†	na
Sweden	+ 2.7	Oct	+ 1.4	+ 2.4	+ 1.9	+ 0.5	Oct	+ 4.6	+ 3.3	Sep*	+ 3.9
Switzerland	+ 0.3	Nov	+ 1.9	+ 1.0	+ 0.6	– 1.4	Oct	+ 2.6	+ 1.3	2000	+ 0.3
United States	+ 2.1	Oct	+ 3.4	+ 2.9	+ 1.6	– 0.4	Oct	+ 3.7	+ 4.1	Oct	+ 3.9
Euro area	+ 2.4	Oct	+ 2.7	+ 2.6	+ 1.5	– 0.6	Oct	+ 6.6	+ 3.0	Q2	+ 2.3
MORE COUNTRIES	Data for the countries below are not provided in printed editions of *The Economist*										
Finland	+ 1.9	Oct	+ 4.1	na	na	– 3.5	Oct	+ 9.6	+ 4.5	Q3*	+ 4.9
Greece	+ 2.8	Oct	+ 4.0	na	na	+ 1.7	Sep	+ 9.2	na		na
Iceland	+ 8.1	Nov	+ 4.6	na	na	+ 6.8	Nov	+ 3.9	+ 9.1	Oct	+ 7.8
Ireland	+ 4.3	Oct	+ 6.8	na	na	– 0.8	Oct	+ 7.7	+ 9.1	Q2*	+ 7.0
Luxembourg	+ 2.3	Oct	+ 3.4	na	na	+ 0.9	Sep	+ 6.1	+ 3.4	Aug*	+ 7.0
New Zealand	+ 2.4	Q3	+ 3.0	na	na	+ 6.2	Q3	+ 8.4	+ 2.0	Q3	+ 1.5
Norway	+ 2.2	Oct	+ 3.1	na	na	–19.1	Oct	+ 7.4	+ 4.4	Q2*	+ 3.9
Portugal	+ 4.1	Oct	+ 3.5	na	na	– 4.9	Oct	+16.9	+ 2.4	Apr*	na

*Not seasonally adjusted. †New series.

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Economic forecasts

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From The Economist print edition

December averages (previous month's, if changed)

	Real GDP, % change				Consumer prices % increase		Current account % of GDP	
	Low/high range		average					
	2001	2002	2001	2002	2001	2002	2001	2002
Australia	1.5/2.7	2.2/4.1	2.1	3.2 (3.1)	4.2	2.4 (2.5)	−2.5(−2.8)	−3.1 (−3.4)
Austria	0.8/1.9	0.2/1.7	1.4 (1.5)	1.1 (1.3)	2.5	1.5	−2.6	−2.4 (−2.5)
Belgium	1.0/1.6	0.1/1.6	1.3 (1.4)	1.1 (1.4)	2.5	1.6	4.0 (4.2)	4.2 (4.4)
Britain	1.9/2.3	1.0/2.1	2.2	1.7 (1.8)	2.0 (2.1)	2.1 (2.2)	−1.7(−1.9)	−2.2 (−2.3)
Canada	1.0/2.3	−0.1/2.9	1.4 (1.5)	1.2 (1.5)	2.6 (2.8)	1.7 (1.9)	2.9	1.9
Denmark	0.4/1.5	0.5/2.0	1.2	1.3 (1.5)	2.3	1.9 (2.0)	2.2 (2.0)	1.8 (1.9)
France	1.9/2.1	0.6/1.9	2.0 (1.9)	1.2 (1.3)	1.7 (1.8)	1.2	1.4 (1.5)	1.4 (1.6)
Germany	0.5/0.8	0.2/1.5	0.7	0.7 (0.9)	2.5	1.2 (1.3)	−0.7(−1.1)	−0.4 (−0.7)
Italy	1.6/2.0	0.5/1.9	1.8	1.1 (1.2)	2.7	1.6 (1.7)	−0.2	nil (−0.1)
Japan	−1.2/1.5	−1.6/1.2	−0.6	−0.8 (−0.5)	−0.7	−0.8 (−0.7)	2.7 (2.0)	1.9 (1.8)
Netherlands	0.7/1.4	0.4/2.5	1.0 (1.3)	1.1 (1.4)	4.7	2.1 (2.2)	3.9 (4.1)	4.0 (4.3)
Spain	2.4/2.8	1.4/2.3	2.6 (2.7)	1.8 (2.0)	3.7	2.3	−2.5(−2.6)	−2.4 (−2.6)
Sweden	1.1/2.2	0.5/3.1	1.6 (1.7)	1.6 (1.9)	2.4	1.9	2.2 (2.1)	2.1 (2.2)
Switzerland	1.3/1.7	nil/1.9	1.6 (1.5)	0.9 (1.2)	1.0 (1.3)	0.6 (1.1)	10.6(10.7)	11.0 (10.9)
United States	0.8/1.2	nil/1.5	1.0	0.6 (0.8)	2.9 (3.0)	1.6 (1.8)	−4.1	−3.9
Euro area	1.4/1.7	0.6/1.9	1.5	1.0 (1.2)	2.6	1.5 (1.6)	−0.3	−0.2 (−0.1)

Sources: ABN Amro, Deutsche Bank, Economist Intelligence Unit, Goldman Sachs, HSBC Securities, KBC Bank, Merrill Lynch, J.P. Morgan Chase, Morgan Stanley Dean Witter, Nordbanken, Decision Economics, Royal Bank of Canada, Schroder Salomon Smith Barney, Scotiabank, Shinsei Bank, UBS Warburg

Each month *The Economist* surveys a group of forecasters and calculates the average of their predictions for economic growth, inflation and current-account balances for 15 countries and the euro area. The table also shows the highest and lowest projections for growth. The previous month's forecasts, where different, are shown in brackets. The panel has yet again reduced its 2002 growth forecasts for everywhere except Australia, which it has revised up slightly to 3.2%—the strongest growth of any country in the table. America's GDP is now expected to grow by only 0.6%, compared with an average forecast of 2.6% in September. Japan's GDP is predicted to decline by 0.8% next year, after a fall of 0.6% in 2001. Inflation forecasts for 2002 have also been revised down in the main economies, with the biggest declines expected in America, Canada and Switzerland.

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Money and interest rates

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	Money supply* % change on year ago			Interest rates % p.a. (Dec 5th 2001)					
				3-mth money market		2-year	10-year gov't bonds		corporate
	narrow	broad		latest	year ago	gov't bonds	latest	year ago	bonds
Australia	+14.7	+10.4	Oct	4.25	6.20	4.42	5.54	5.70	6.69
Britain	+ 6.9	+ 8.1	Oct	3.75	5.91	4.43	4.75	4.83	6.04
Canada	+11.2	+ 4.2	Oct	2.05	5.52	3.41	5.37	5.41	7.06
Denmark	+ 5.9	+ 4.0	Oct	3.63	5.47	4.05	4.82	5.21	7.06
Japan	+11.7	+ 3.6	Oct	0.02	0.50	0.10	1.36	1.62	1.45
Sweden	+ 7.3	+ 4.9	Oct	3.75	4.06	4.41	5.11	4.88	5.31
Switzerland	+ 1.8	+ 4.2	Oct	1.93	3.50	2.37	3.21	3.69	4.25
United States	+ 5.6	+13.0	Oct	1.84	6.45	3.07	4.90	5.32	6.61
Euro area†	+ 5.3	+ 7.4	Oct	3.35	4.95	3.41	4.62	4.86	5.33

*Narrow: M1 except Britain and Sweden M0, broad: M2 or M3 except Britain M4. †Germany for bonds. Benchmarks: US 30-year 5.22%, Japan No.235 1.38%. Central bank rates: US fed funds 2.00%, ECB refinancing 3.25%, BOJ overnight call 0.002%, BOE repo 4.00%. Sources: Commerzbank, Danske Bank, J.P. Morgan Chase, Royal Bank of Canada, OM Fixed Income Exchange, UBS Warburg, DRI-WEFA, Westpac, Thomson Financial Datastream. Rates cannot be construed as banks' offers.

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The Economist commodity price index

Dec 6th 2001
From The Economist print edition

1995=100

	Nov 27th	Dec 4th*	% change on one month	% change on one year
Dollar index				
All items	66.0	65.8	+ 4.4	– 9.3
Food	67.9	68.2	+ 3.3	– 4.3
Industrials				
All	63.3	62.5	+ 6.0	–15.8
Nfa†	57.5	57.6	+ 1.4	–16.3
Metals	68.2	66.6	+ 9.6	–15.4
Sterling index				
All items	73.6	73.0	+ 7.1	– 7.8
Euro index				
All items	98.4	97.0	+ 5.0	– 9.9
Yen index				
All items	87.0	86.9	+ 7.1	+ 1.7
Gold				
$ per oz	273.45	276.20	– 1.1	+ 1.9
West Texas Intermediate				
$ per barrel	19.24	19.41	– 1.7	–34.3

* Provisional. † Non-food agriculturals.

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Stockmarkets

Dec 6th 2001
From The Economist print edition

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Market indices

	Dec 5th	2001 high	2001 low	% change on one week	% change on record high	% change on Dec 31st 2000 in local currency	% change on Dec 31st 2000 in $ terms
Australia (All Ordinaries)	3,286.3	3,425.2	2,867.4	– 0.1	– 4.1	+ 4.2	– 3.2
Austria (ATX)	1,125.6	1,245.8	1,014.3	+ 2.7	–35.2	+ 4.9	– 0.8
Belgium (Bel 20)	2,618.4	3,030.4	2,322.6	+ 1.3	–28.9	–13.4	–18.1
Britain (FTSE 100)	5,333.5	6,334.5	4,433.7	+ 2.5	–23.0	–14.3	–18.7
Canada (Toronto Composite)	7,620.2	9,348.4	6,513.1	+ 3.6	–33.1	–14.7	–18.4
Denmark (KBX)	223.5	294.3	197.8	+ 2.2	–25.9	–15.6	–19.9
France (SBF 250)	3,018.2	3,820.2	2,335.3	+ 4.9	–31.3	–20.0	–24.3
(CAC 40)	4,677.6	5,998.5	3,652.9	+ 5.2	–32.4	–21.1	–25.3
Germany (Xetra DAX)	5,262.8	6,795.1	3,787.2	+ 7.1	–34.7	–18.2	–22.6
Italy (BCI)	1,454.9	1,948.4	1,082.9	+ 3.3	–33.3	–24.1	–28.2
Japan (Nikkei 225)	10,713.8	14,529.4	9,504.4	+ 0.8	–72.5	–22.3	–28.6
(Topix)	1,047.3	1,441.0	863.4	– 0.6	–63.7	–18.4	–25.0
Netherlands (AEX)	506.2	642.3	396.2	+ 3.4	–27.8	–20.6	–24.9
Spain (Madrid SE)	865.0	963.9	648.6	+ 4.9	–24.5	– 1.8	– 7.1
Sweden (Affarsvarlden Gen)	239.6	293.1	177.5	+ 5.7	–40.2	–13.7	–23.1
Switzerland (Swiss Market)	6,474.3	8,135.4	5,110.2	+ 3.0	–23.0	–20.4	–22.3
United States (DJIA)	10,114.3	11,337.9	8,235.8	+ 4.1	–13.7	– 6.2	– 6.2
(S&P 500)	1,168.8	1,373.7	965.8	+ 3.6	–23.5	–11.5	–11.5
(Nasdaq Comp)	2,046.8	2,859.2	1,423.2	+ 8.4	–59.5	–17.1	–17.1
Europe (FTSE Eurotop 300)*	1,269.8	1,545.5	998.9	+ 3.7	–25.5	–17.2	–21.7
Euro area (FTSE Ebloc 100)*	1,121.3	1,404.1	843.6	+ 5.2	–27.7	–19.5	–23.8
World (MSCI)†	1,021.4	1,249.2	856.6	+ 3.5	–29.5	na	–16.4
World bond market (Salomon)‡	446.6	461.7	420.6	– 0.1	– 2.9	na	+ 0.6

*In euro terms. †Morgan Stanley Capital International index includes individual markets listed above plus eight others, in dollar terms.
‡Schroder Salomon Smith Barney World Government Bond Index, total return, in dollar terms.

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Trade, exchange rates and budgets

Dec 6th 2001
From The Economist print edition

	Trade balance*, $bn latest 12 months	Current account $bn latest 12 mths	Current account The Economist poll % of GDP, forecast 2001	Current account The Economist poll % of GDP, forecast 2002	Exchange rate trade-weighted† Dec 5th	Exchange rate trade-weighted† year ago	Currency units per $ Dec 5th	Currency units per $ year ago	Currency units per £	Currency units per euro	Currency units per ¥100	Budget balance % of GDP 2001‡
Australia	+ 2.1 Oct	− 8.5 Q3	− 2.5	− 3.1	72.8	73.6	1.94	1.84	2.74	1.72	1.56	0.1
Austria	− 5.0 Aug	− 4.3 Sep	− 2.6	− 2.4	100.2	99.5	15.5	15.6	22.0	13.8	12.5	nil
Belgium	+ 11.0 Sep	+ 8.9 Jun	+ 4.0	+ 4.2	99.0	98.2	45.4	45.6	64.4	40.3	36.6	nil
Britain	− 47.1 Sep	− 19.2 Q2	− 1.7	− 2.2	104.9	105.4	0.71	0.70	–	0.63	0.57	1.1
Canada	+ 44.4 Sep	+ 23.9 Q3	+ 2.9	+ 1.9	76.7	77.9	1.57	1.54	2.23	1.40	1.26	2.8
Denmark	+ 7.1 Sep	+ 5.2 Sep	+ 2.2	+ 1.8	102.3	100.3	8.38	8.43	11.9	7.45	6.75	2.0
France	− 0.8 Sep	+ 21.8 Sep	+ 1.4	+ 1.4	101.6	100.7	7.39	7.41	10.5	6.56	5.94	-1.5
Germany	+ 66.1 Sep	− 11.6 Sep	− 0.7	− 0.4	98.5	97.3	2.20	2.21	3.12	1.96	1.77	-2.5
Italy	+ 3.5 Sep	− 3.6 Aug	− 0.2	nil	72.5	71.9	2,180	2,189	3,090	1,936	1,755	-1.4
Japan	+ 77.5 Sep	+ 89.4 Sep	+ 2.7	+ 1.9	136.1	152.9	124	110	176	110	–	-6.4
Netherlands	+ 18.3 Sep	+ 11.1 Q3	+ 3.9	+ 4.0	97.9	96.9	2.48	2.49	3.52	2.20	2.00	1.1
Spain	− 38.4 Sep	− 15.4 Aug	− 2.5	− 2.4	74.2	73.6	187	188	266	166	151	nil
Sweden	+ 12.6 Oct	+ 6.3 Sep	+ 2.2	+ 2.1	74.4	81.0	10.58	9.67	15.0	9.39	8.51	3.8
Switzerland	nil Oct	+ 27.9 Q2	+10.6	+11.0	111.9	107.8	1.66	1.71	2.35	1.47	1.34	na
United States	−444.5 Sep	−449.9 Q2	− 4.1	− 3.9	120.2	115.1	–	–	1.42	0.89	0.80	0.6
Euro area	+ 18.8 Sep	− 35.9 Sep	− 0.3	− 0.2	78.7	77.5	1.13	1.13	1.60	–	0.91	-1.2
MORE COUNTRIES	Data for the countries below are not provided in printed editions of *The Economist*											
Finland	+ 12.8 Sep	+ 8.0 Sep	na	na	78.4	76.6	6.69	6.72	9.48	5.94	5.38	3.7
Greece	− 7.4 Jun	− 7.3 Jun	na	na	57.4	56.9	384	385	544	341	309	0.2
Iceland	− 0.2 Oct	− 0.9 Q1	na	na	na	na	109	86.8	155	96.8	87.7	-0.2
Ireland	+ 31.4 Sep	− 1.5 Q2	na	na	87.5	86.3	0.89	0.89	1.26	0.79	0.72	3.2
Luxembourg	− 3.3 Aug	+ 1.2 Q2	na	na	99.0	98.2	45.4	45.6	64.4	40.3	36.5	5.3
New Zealand	+ 0.3 Oct	− 1.9 Q2	na	na	79.5	77.5	2.41	2.36	3.42	2.14	1.94	1.3
Norway	+ 26.9 Oct	+ 26.1 Sep	na	na	96.2	93.2	8.99	9.10	12.7	7.98	7.24	14.3
Portugal	− 13.9 Aug	− 9.1 Aug	na	na	89.4	88.7	226	227	320	201	182	-1.7

*Merchandise. Australia, Britain, France, Canada, Japan and United States imports fob, exports fob. All others cif/fob. †1990=100, Bank of England. ‡OECD estimate.

Text refers only to the first 16 countries listed

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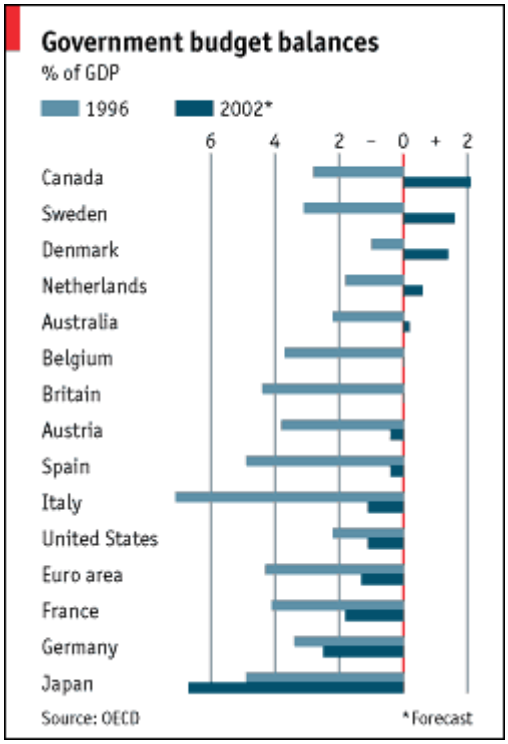
Government budget balances

Dec 6th 2001
From The Economist print edition



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Overview

Dec 6th 2001
From The Economist print edition

The risk premium on **Argentine** bonds rose to 40 percentage points above American Treasury bonds. Argentina's government introduced emergency measures to limit cash withdrawals from banks. Consumer prices fell by 1.6% in the 12 months to November.

Taiwan is also suffering deflation: its consumer prices fell by 1.1% in the 12 months to November; wholesale prices fell by 4.7%.

Brazil's GDP rose in the third quarter by 0.2% at an annual rate; but the 12-month rate of growth fell to only 0.3%.

The **South African** rand (one of the world's most undervalued currencies, according to *The Economist*'s Big Mac index) fell to a new low, to give a total decline of 30% this year.

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Wages

Dec 6th 2001
From The Economist print edition

There is a huge gap in statutory minimum wages between rich and poor countries. Yet even within the European Union there are wide differences. Spain's minimum wage is about one-fifth as big as Luxembourg's. Eastern Europeans hoping to join the EU have lower minimum wages still. The chart is based on market exchange rates, which may understate the purchasing power of minimum wages in poor countries.

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Economy

Dec 6th 2001
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	% change on year earlier						Latest 12 months, $bn				Foreign reserves* $bn, latest	
	GDP		Industrial production		Consumer prices		Trade balance		Current account			
China	+ 7.0	Q3	+ 8.8	Oct	+ 0.2	Oct	+18.6	Oct	+20.5	2000	199.3	Sep
Hong Kong	– 0.3	Q3	– 0.1	Q2	– 1.2	Oct	–12.1	Oct	+ 8.3	Q2	113.1	Oct
India	+ 4.4	Q2	+ 1.6	Sep	+ 4.2	Oct	– 6.1	Sep	– 0.9	Q2	42.2	Oct
Indonesia	+ 3.5	Q3	+ 3.2	Q2	+12.9	Nov	+25.2	Oct	+ 4.0	Q3	28.0	Nov
Malaysia	– 1.3	Q3	– 9.7	Sep	+ 0.9	Oct	+15.0	Oct	+ 7.5	Q2	25.4	Sep
Philippines	+ 2.9	Q3	– 1.1	Sep	+ 4.4	Nov	+ 3.4	Sep	+ 5.1	Aug	12.3	Sep
Singapore	– 5.6	Q3	–21.4	Oct	+ 0.2	Oct	+ 4.2	Oct	+22.1	Q3	76.2	Oct
South Korea	+ 1.8	Q3	– 1.3	Oct	+ 3.4	Nov	+11.1	Oct	+10.3	Oct	100.4	Oct
Taiwan	– 4.2	Q3	– 6.7	Oct	– 1.1	Nov	+14.1	Oct	+16.2	Q3	116.2	Oct
Thailand	+ 1.9	Q2	+ 1.8	Oct	+ 1.0	Nov	+ 2.6	Oct	+ 6.4	Oct	32.4	Oct
Argentina	– 0.5	Q2	– 7.6	Oct	– 1.6	Nov	+ 4.9	Oct	– 8.4	Q2	18.1	Oct
Brazil	+ 0.3	Q3	– 1.9	Sep	+ 8.2	Oct	+ 1.6	Nov	–25.4	Oct	37.5	Oct
Chile	+ 2.6	Q3	+ 4.9	Oct	+ 3.1	Nov	+ 1.5	Oct	– 1.7	Q3	14.3	Oct
Colombia	+ 1.0	Q3	– 0.8	Sep	+ 7.8	Nov	+ 0.8	Sep	– 0.7	Q2	10.0	Oct
Mexico	– 1.6	Q3	– 5.4	Sep	+ 5.9	Oct	– 9.5	Oct	–16.6	Q3	43.4	Oct
Peru	+ 3.5	Oct	+ 0.7	Sep	+ 0.1	Nov	– 0.2	Sep	– 1.4	Q3	8.4	Sep
Venezuela	+ 2.8	Q3	+ 3.2	Aug	+12.2	Nov	+13.7	Q3	+ 8.7	Q3	9.3	Oct
Egypt	+ 6.5	2000†	+ 9.4	2000†	+ 2.1	Sep	– 8.8	Jul	nil	Q2	13.5	Aug
Israel	– 2.7	Q3	–15.4	Sep	+ 2.0	Oct	– 7.1	Oct	– 1.4	Q2	23.8	Oct
South Africa	+ 0.1	Q3	+ 0.5	Sep	+ 4.0	Oct	+ 4.1	Oct	+ 0.3	Q3	6.1	Oct
Turkey	– 7.1	Q3	– 9.2	Sep	+67.3	Nov	–15.8	Sep	– 1.2	Aug	19.0	Sep
Czech Republic	+ 3.9	Q2	+ 1.1	Sep	+ 4.4	Oct	– 3.2	Oct	– 2.6	Q3	14.7	Oct
Hungary	+ 3.7	Q3	+ 2.4	Oct	+ 7.6	Oct	– 2.0	Oct	– 1.0	Oct	11.8	Oct
Poland	+ 0.9	Q2	+ 1.4	Oct	+ 4.0	Oct	–11.7	Oct	– 5.7	Oct	28.0	Oct
Russia	+ 5.1	Q2	+ 5.1	Oct	+18.8	Nov	+56.7	Sep	+44.6	Q2	34.0	Oct
MORE COUNTRIES	Data for the countries below are not provided in printed editions of *The Economist*											
Pakistan	+ 3.3	2001†	+ 5.0	Jul	+ 2.9	Oct	– 1.2	Sep	+ 0.3	2001†	2.4	Oct
Saudi Arabia	+ 4.5	2000§	na		– 0.5	Sep	+50.9	2000	+15.6	2000	17.1	Oct

*Excluding gold, except Singapore; IMF definition. †Year ending June. § Economist Intelligence Unit estimate.

Text refers only to the first 25 countries listed

Sources: National statistics offices, central banks and stock exchanges; Thomson Financial Datastream; Economist Intelligence Unit; Reuters; Warburg Dillon Read; J.P Morgan Chase; Hong Kong Monetary Authority; Centre for Monitoring Indian Economy; FIEL; EFG-Hermes; Bank Leumi Le-Israel; Standard Bank Group; Garanti Bank; Deutsche Bank; *Russian Economic Trends*.

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Financial markets

Dec 6th 2001
From The Economist print edition

	Currency units			Interest rates	Stockmarkets	% change on		
	per $		per £	short-term	Dec 5th		Dec 31st 2000	
	Dec 5th	year ago	Dec 5th	% p.a.		one week	in local currency	in $ terms
China	8.28	8.28	11.7	na	1,819.5	+0.5	−17.0	−17.0
Hong Kong	7.80	7.80	11.1	1.94	11,678.4	+5.5	−22.6	−22.6
India	47.9	46.7	67.9	6.71	3,409.6	+3.5	−14.2	−16.3
Indonesia	10,470	9,605	14,841	17.91	377.9	−1.3	−9.2	−16.1
Malaysia	3.80	3.80	5.39	3.30	653.0	+1.9	−3.9	−3.9
Philippines	52.0	50.1	73.7	11.19	1,122.0	+0.1	−24.9	−27.8
Singapore	1.83	1.74	2.60	1.19	1,593.2	+7.9	−17.3	−21.9
South Korea	1,266	1,200	1,794	4.77	688.3	+8.9	+36.4	+36.3
Taiwan	34.4	33.0	48.8	2.60	4,924.6	+10.7	+3.8	−0.2
Thailand	44.0	43.6	62.3	2.75	303.8	+3.7	+12.9	+11.4
Argentina	1.01	1.00	1.44	54.30	229.2	+8.1	−45.0	−45.8
Brazil	2.43	1.96	3.44	19.05	13,382.1	+2.8	−14.2	−31.1
Chile	673	575	954	5.29*	5,455.8	+1.0	+12.1	−4.5
Colombia	2,315	2,177	3,282	11.44	929.7	+0.9	na	na
Mexico	9.22	9.41	13.1	6.18	6,099.3	+4.3	+7.9	+12.5
Peru	3.43	3.53	4.86	3.22	1,181.2	+0.1	−2.3	+0.5
Venezuela	748	698	1,060	14.69	6,211.4	−0.7	−8.6	−14.5
Egypt	4.27	3.83	6.05	7.87	5,141.3	+1.2	−32.9	−38.9
Israel	4.23	4.09	5.99	3.75	389.1	−1.9	−21.3	−24.7
South Africa	10.8	7.58	15.3	9.39	9,830.3	+6.2	+18.1	−17.4
Turkey	1,456,000	679,040	2,063,880	57.00	11,930.6	+7.2	+26.4	−41.8
Czech Republic	37.2	39.5	52.7	4.76	401.3	+2.0	−16.1	−15.1
Hungary	281	300	398	10.19	7,250.5	+0.4	−7.6	−7.0
Poland	4.08	4.40	5.78	12.11	14,317.6	+0.7	−19.8	−18.7
Russia	30.0	27.9	42.5	25.00	234.5†	+4.6	+71.1	+63.7
EMF (MSCI)‡	1.00	1.00	1.42	na	310.4	+5.2	na	−7.0
EMBI+§	1.00	1.00	1.42	na	200.6	−0.1	na	−0.7

*Inflation adjusted. †In $ terms. ‡Emerging Markets Free. §J.P. Morgan Chase's Emerging Markets Bond Index Plus.

Sources: National statistics offices, central banks and stock exchanges; Thomson Financial Datastream; Economist Intelligence Unit; Reuters; Warburg Dillon Read; J.P Morgan Chase; Hong Kong Monetary Authority; Centre for Monitoring Indian Economy; FIEL; EFG-Hermes; Bank Leumi Le-Israel; Standard Bank Group; Garanti Bank; Deutsche Bank; *Russian Economic Trends*.

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